Landscape, Material Culture and Society in South East Bulgaria

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Abstract

The PhD study focuses on long-term settlement histories in the late prehistory of South East Bulgaria, based upon three contrasting microregions. Two of them have been destroyed by intensive coal mining, which has necessitated the application of GIS as a rescue tool to reconstruct the landscape. The third, undestroyed microregion was included in the study to enable the comparison of settlement patterns in three neighbouring valleys. The main research aims are the social and economic aspects of the human/landscape interrelation, as well as the patterns of change and continuity from the initial occupation at the beginning of the Neolithic until the end of the Late Bronze Age. Along with the GIS technique, which proved to be a relevant analytical tool, a set of modern interpretative modes in archaeology was applied to achieve the research targets. The general and specific approaches in the study are prompted by the state of the primary data, which but rarely allows precise contextual analysis.

As a result of the introduction of the concepts of landscape archaeology and social practices in the studies of Bulgarian late prehistory, it was possible to establish crucial links between the identity of people, places and objects. The identification of a suite of social practices has integrated the Bulgarian evidence in a broader context of human development and has contributed to the radical re-interpretation of most of the current explanations of the evidence at the study area.

The reconstruction of past landscapes in the three microregions, together with the newly reconciled concepts of landscape and environment, have facilitated the reconstruction of past settlement patterns, resource potential and inter-site transport networks. Through the evaluation and re-interpretation of site evidence for all settlements and burials, it was possible to make a comparative interpretation of diachronic changes in settlement, society, material culture and landscapes.

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Fig. 1.1.1 The Study Area in Context

Study Area

Flint sources - North East Bulgaria

Probable lithic sources - the Rhodopes

Possible sources of plum tree - Caucasus mountains

Possible sources of glaucophane schists - Aegean

Possible sources of *Spondylus*

Chapter One - Setting the scene

The most important issue that every secondary school Bulgarian pupil learns after his/her first geography and history lessons is the significance of the particular location of the modern Bulgarian State. All the climaxes and nadirs in Bulgarian history have been related to what we now call the geographical characteristics of the South Balkans (Pounds 1969). Bulgaria – even when the state did not bear this name- has always been on the threshold of Asia and on the threshold of Europe (Fig. 1.1.1).

What is not surprising, though, is the abundance of later prehistoric monuments covering the territory South of the Danube and West of the Black Sea up to the Aegean and Adriatic coasts. Within the boundaries of present-day Bulgaria, there are 70,000 archaeological sites, dating from the Middle Palaeolithic up to Late Mediaeval times. The dry language of statistics – 556 tells, 492 flat sites, 75 cemeteries and numerous barrows – could be read as an intensive, dynamic human occupation that intensified from 7000 CAL BC onwards. The earliest evidence for the settlement of the Upper Thracian Plain in South Bulgaria dates to the Early Neolithic (6000 - 5000 CAL BC: Boyadziev 1995. The South East part of this valley forms the study area in this thesis.

1.1 The study area

1.1.1 Geographical framework

South East Bulgaria was persistently and relatively evenly inhabited until the urbanization of the last century, although a major part included the upland zones of the Eastern Rhodopes and the Strandja Mountains. Three important rivers – the Maritsa, the Tundja and the Arda – flow within the region and, along with their tributaries, form a large lowland area known since Classical times for its fertility (Casson 1925, Venedikov 1981).

Late prehistoric sites are mainly distributed in the valleys but there are traces of Copper Age, Late Bronze Age and, especially, Iron Age human occupation in the Eastern Rhodopes as well.

The Eastern sub-area of the wide Upper Thracian Plain and three small river valleys and their adjacent territories forms the research topic of this study. The rivers Sokolitsa and Ovcharitsa are second-order tributaries of the river Sazliika, which flows into the river Maritsa. The third small river course in consideration is the Kalnitsa – a first-order tributary of the river Tundja. Both the Maritsa and the Tundja drain into the Aegean Sea.

The study area covers the middle and lower course of the rivers Sokolitsa, Ovcharitsa and Kalnitsa. Its Western border is the lower course of river Sazliika and the middle Tundja valley forms its Eastern boundary. The Southern boundary follows the natural termination of the Upper Thracian Plain – the foothills of the Sakar Mountain and the Manastirski vuzvishenia (Monastery Hills). It is more difficult to define the Northern end, in the absence of any prominent landscape feature. For the purposes of the definition of the study area, its Northern boundary is taken as the latitude starting from the town of Radnevo and moving to the East as far as Tundja river (Fig.1.1.2).

1.1.2 Background to archaeological fieldwork

Two of the rivers (Sokolitsa and Ovcharitsa) belong to the Maritsa catchment basin, while the Kalnitsa lies in the Tundja catchment area. This explains why these three rivers have always been accepted as belonging to different environmental zones and their geographical and archaeological investigations have developed separately. The Sazliika and its tributaries Sokolitsa and Ovcharitsa fall within the territory of the Maritsa Iztok Power Complex that consists of three open-cast coal mines, three energy plants and a coal-making factory. Industrial exploitation of the basin, which covers 220 km2, started in the early 1950s. Some ten years before that, small-scale mining works undertaken by private enterprises were soon terminated. The first historic records for exploitation of the Maritsa Iztok coal seams date from 1847, when the French investigator Henry Viquenel surveyed the area. The first official coal production was known to have begun in 1896 (Sarkis 1992). So far, more than half of seams have been exploited, which means that half of the study zone has been either excavated or covered by spoil heaps. The expected plan is that the remaining deposits will be excavated by 2030, resulting in the gradual destruction of the other half of the area.

In the early 1960s, archaeological investigations started in parallel with the excavation of strip-mining of coal. For almost 25 years, different teams undertook rescue excavations of the most severely threatened archaeological sites and traces of the salvage character of these operations are visible in the investigations' results. Sites were either partially destroyed by mine-works or their study left incomplete due to the excavation of the sites' area or its covering by spoil-heaps. The field and recording techniques were not very precise and publications were rare but whatever the outcomes of the studies, they were very important since, for certain sites, these are the only evidence that is left.

More systematic and purposeful investigations began after 1986, when the "Maritsa Iztok Expedition" team was set up. It consisted of archaeologists from Sofia University, the National Archaeological Institute, the Institute of Thracology and Nova Zagora Museum. In the following year, a local archaeological museum in

Radnevo was established that was important for both storage and later display of the abundance of excavated artefacts. Fieldwork was the main activity of museum staff throughout the year but, in the busiest times, they were aided by the above-mentioned expedition team. In 1998, I was invited to join the expedition team as a field archaeologist, after years of working in the region as a student.

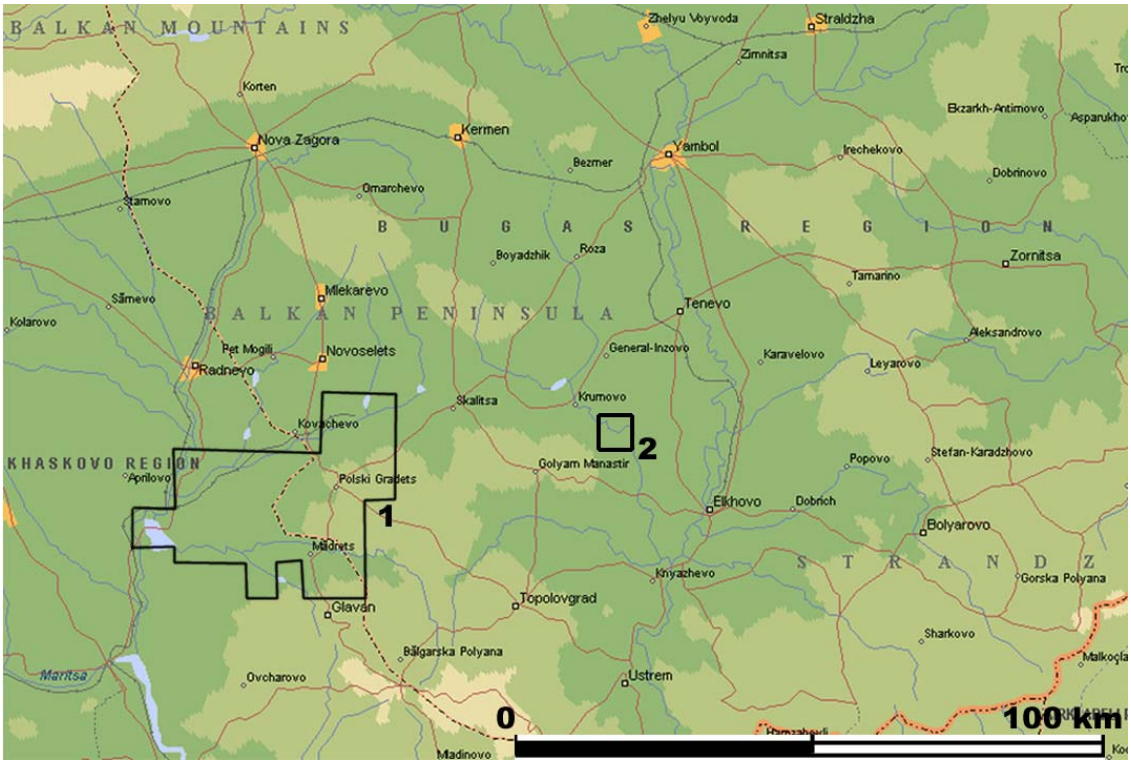


Fig. 1.1.2 Study Area 1 – Maritsa Iztok power complex, 2 – Drama microregion

Working under constant pressure inevitably affected the work of the team. Very often archaeologists would solve problems "on-line", not having the opportunity to justify their decisions or even to make proper records of a certain site. The mines funded both the "Maritsa Iztok Expedition" project and the museum but administrative obstacles were not rare. The long-term investigation programme was often re-scheduled according to changing mining priorities involving different coal production zones and new spoil-heaps. There were, unfortunately, even cases of monuments destroyed without any archaeological survey. The investigation strategy was a flexible combination of field surface survey, the excavation of threatened sites and long-term excavations of sites such as fortresses and tells, whose destruction was forecast for subsequent years. As a result, 227 archaeological monuments have been registered – 5 tells, 92 flat (open-air) settlements, 114 tumuli, 7 flat cemeteries, 4 fortresses and 3 pit complexes; at 46 of these sites, rescue excavations were undertaken (B. Borisov pers. comm.). Post-excavation activity, although not a priority of the Expedition, includes the publication of six volumes of the "Maritsa Iztok Expedition" project, which present the most important results throughout the ten years of the Expedition's existence; the organization of two conferences on the problems, place and context of the sites and their investigations in Maritsa Iztok Power Complex area; and the maintenance of a permanent exhibition in Radnevo Museum, as well as temporary displays on specific themes.

The most important characteristic of the study region was its everyday destruction. For an outsider, that means landscape devastation versus energy production. For an insider, that means the erasing of her/his biographies, cutting local roots and breaking spatial relations with the ancestors. A few years of working in the region were enough to make me an insider. Witnessing the total and irreversible destruction of villages, archaeological sites and their immediate natural environment that they have been sharing for decades and centuries, if not millennia, gradually led to the idea of a landscape study – a study that was not merely possible but extremely necessary. Why (not just when) did people come and settle in the region? What was their relation and attitude to the landscape they lived within? Were they "invaders" or "dwellers"? Was it the landscape that "constitutes" the human network or there was something other than simple environmental determinism in the choices of site locations? These basic issues formed an important rationale for an attempt at systematizing the known archaeological material and placing it in a wider landscape context.

Exactly the opposite destiny pertains to the third microregion in the present study – the valley of the river Kalnitsa. This microregion lies immediately East of the meridian where the Sokolitsa curves to the South and the Ovcharitsa to the North, towards their sources. The three small valleys are "divided" by the foothills of the Sakar Mountain known as Manastirski vuzvishenia (Monastery Hills), whose highest peak – Kaleto - lies at 448masl. The Kalnitsa valley is a non-industrial, rural environment, which, from a contemporary point of view, would appear to be a "backward" region (Fig.1.1.2).

The total lack of industrialization or previous archaeological investigation attracted the attention of a German team that started long-term microregional archaeological studies in 1983 in the territory of the modern village of Drama. This relatively undisturbed microregion, that has been claimed to play an important role in the past, presents a settlement history based upon up to 20 sites and several barrows from the Early/Middle Neolithic up to Byzantine times. Systematic interdisciplinary investigations have so far been regularly undertaken for almost 20 years. Their results were presented in a series of publications (Lichardus et al.1989, 1996, 2000, 2001) and a series of exhibitions in Bulgarian museums. For better or for worse, Bulgarian archaeologists were very selectively included in the work of the Drama Expedition, leading to a general unawareness of the results from the most significant archaeological sites along the Kalnitsa river amongst Bulgarian archaeologists. In this study, I hope to compare and contrast the settlement histories of these three microregions and make the results of previous studies more widely available.

1.1.3 Chronological and spatial framework

The initial research intentions were to investigate prehistoric sites within the three selected microregions. Since the selected areas contain many "post-prehistoric" sites, they were excluded from immediate exploration but will be used for reference, especially for cases involving the continuity of site occupation. Territorial boundaries are more difficult to set, since the definition of the three microregions could significantly vary. For the Kalnitsa valley, the boundaries of the Drama microregion are taken as those established by the German expedition (Lichardus et al. 2000: Abb.2). The valleys of the middle and lower courses of the Sokolitsa and Ovcharitsa were selected as the remaining two microregions because a) the three study areas are of comparable size and b) the most intensive investigations of "Maritsa Iztok Expedition" took place there (Fig. 1.1.2). Those prehistoric sites that fall outside the above-defined microregions will be used for references but without emphasis on their research results.

The currently accepted C14 dates for the main periods in late Bulgarian prehistory are summarized in Table 1.1.1. For simplicity, the division of the Neolithic and Copper Age is made after Georgiev (1961), and after Leshtakov (1992) for the Bronze Age.

PERIOD	PHASE	DATE RANGE (cal. B.C.)*
Early Neolithic	Karanovo I - II	6300 - 5450
Middle Neolithic	Karanovo III	5500 - 5100
Late Neolithic	Karanovo IV	5200 - 4850
Early Copper Age	Karanovo V	4900 - 4550
Middle Copper Age	-	4600 - 4400
Late Copper Age	Karanovo VI	4500 - 3800
Transitional period	-	3850 - 3150
Early Bronze Age	EBA I - III	3200 - 2500
Middle Bronze Age	-	2550 - 2100
Late Bronze Age	-	1600 - 1000

Table 1.1.1 Calibrated dates for phases in Bulgarian later prehistory
** Source: Boyadziev 1995*

1.2 Aims and objectives

The initial research interest was the comparison of the prehistoric settlement patterns in two adjacent small valleys in South East Bulgaria – an area with an important geographical location and intensive investigations but with very little archaeologically relevant synthesis and no history of landscape research. It was presumed that 40 years of rescue excavations would provide an enormous amount of archaeological data, which even if differing in quality, could facilitate a detailed, contextually- based settlement study (Hodder 1982; 1982a). In fact, it became apparent that the goals of recovering "precious" objects and the solution of chronological issues - the tasks of the earlier settlement investigations – stood in marked contrast to the more recent, analytically-oriented excavations of the late 1980s and early 1990s. The huge amount of artefacts was associated with very little, if any, relevant contextual information. In addition, restricted access to large parts of the archaeological material did not give any opportunity for widespread reconstruction of intra-site structures, features and contexts – a problem which rendered in compatible the earlier and later survey data sets. Without these comparable site records, any attempt at intra an inter-site analysis would be highly speculative, especially for the assertion of changing or recurrent patterns. The evident necessity for re-focussing my research led to a new evaluation of the data sets, in terms of the possibilities of a limited contextual study in combination with a broader comparative approach.

Given these problems of data conditions, types of investigation and landscape status for the Maritsa Iztok area, it was crucial to re-define the study to achieve

genuine comparability of archaeological data. For this purpose, the study area was re-structured and sampled to cover two microregions – the Sokolitsa and Ovcharitsa valleys, to which a third – the Kalnitsa valley - was added. This microregional aspect is the second goal of the inquiry. Microregions which are defined purely geographically (viz., as river valleys) are not meant to be closed or constraining units. Rather, the premise of their separation is on an operational level – to structure the evidence and enable comparative analysis between microregions. Whether or not these microregional divisions coincide with specific human occupation preferences is an important issue of the study.
Following on from the re-focussing of the thesis, the overall aims of the present study are fivefold:-

(1) the reconciliation of concepts of landscape and environment
(2) the reconstruction of past landscapes of the three microregions
(3) the evaluation and re-interpretation of site evidence for all settlements and burials
(4) the reconstruction of past settlement patterns, resource potential and inter-site transport networks in each of the three microregions
(5) the comparative interpretation of diachronic changes in settlement, society, material culture and landscapes in the three microregions

The major challenge of this research is to overcome the prevailing cultural-historical approach in Bulgarian archaeology and to envisage the sites as human activity traces (material culture) of a group of interrelated individuals (society) that functioned in a certain community framework usually called an archaeological culture. It is not a priority of this study to discuss the origin, development and the reasons for the vitality of the archaeological culture concept. Rather, I should try to apply a different approach to archaeological evidence, in which through identification of similarities, differences and particularities of human occupation in the study region, I shall try to explain the settlement patterns, their change and/or continuity. The term archaeological culture is going to be used in the statement only for illustration of widely known and named material evidence (e.g., the Maritsa culture) but not in its presumed or inherited social aspects.

The detailed study of prehistoric societies in the Sokolitsa, Ovcharitsa and Drama microregions (e.g. social organization, degree of complexity, etc.) is not a research priority. Nor are the particular characteristics of prehistoric material culture of each of the sites. Rather, material culture and society are accepted as two of the components of landscape-material culture-society entity and will be explored in their mutual relation, summarized by Chapman (1997) as the identity triangle (Fig. 1.2.1):

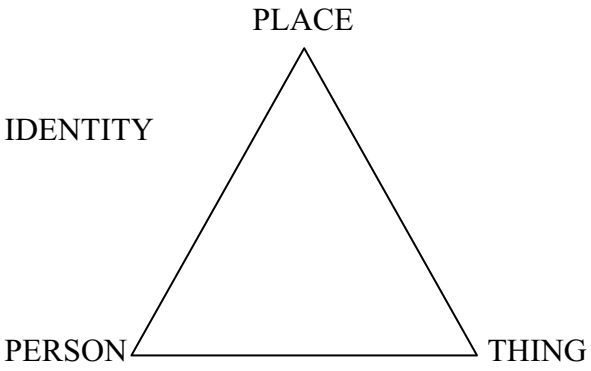


Fig. 1.2.1 The identity triangle (after Chapman)

1.3 Methodological framework

A four-level, nested level of study is applied to the 26 sites[1] in consideration.

The first level is the site level, in which the basic archaeological data is presented together with relevant source criticism. The variety and bulk of material culture evidence is examined for patterns of deposition such as structured deposition (pits, burials, burnt houses, etc.) or de facto deposition (outdoor activity, site abandonment, etc.). The recurrent, changing or unique patterns of deposition were related to various deliberate social practices that may have taken place everyday (e.g. personal enchainment), every year (e.g. communal feasting) or once in a life-time (e.g. burial).

The second level of study is the site/off- site level that incorporates landscape and environmental GIS analyses. The first type of analysis includes location, viewshed and cost surface analyses, which enable the visual and relative distance relation between the sites to be established. The second type is site catchment analysis, that provides information for the distribution of resources at equal distances from the site.

The third level of study is the microregional level, in which the data from each site is combined and explored as a whole in order to establish the occupational sequence. The establishment of the specific role of antecedent landscapes for the repeating or changing settlement patterns is a major result from the microregional level of inquiry (Zvelebil & Beneš 1997).

The final level of analysis is on the study region level, in which the comparative approach provides general pattern of differences and similarities in social practices and settlement dynamics in both temporal and spatial aspects for all of three microregions.

[1] The actual number of places of human occupation is more than 26, since there are multi-period sites (e.g. tells) and barrow cemeteries in which there are more than one mounds, but the site is considered in general as one (e.g. MIBC).

1.4. Summary of thesis by chapters

In Chapter 2, a synthesis of the major trends of prehistoric research in Bulgaria was made as more attention was paid to the issues discussed in later chapters. Many controversial and out-of-date concepts were not criticized, since they were made at a time of a specific ideological agenda and since a detailed critique of the interpretative framework of Bulgarian prehistoric research in the last 50 years is not an aim of the current study. To avoid repetition, some general reviews are made in a more relevant place in a certain chapter (e.g. the concepts for structured deposition are summarized in the section for approaches to material culture) rather than to include them in Chapter 2. Following the structuring principle of this research, in which chapter two is devoted to a general history of concepts and ideas, discussed in later chapters, rather than commenting on particular case-studies, a brief introduction to GIS in archaeology was also included in the chapter. GIS applications in archaeology that are relevant to this study and some general debates of the characteristics of the GIS studies are summarized in Chapter 3.

In Chapter 3, the theoretical basis of the study was formulated through the presentation of case study-based sections on each of the three main research components – landscape-material culture-society - structured as a discussion of different research topics commented on in later chapters (e.g. the concepts of landscape archaeology, structured deposition and site catchment analysis). This chapter includes references mainly from Western archaeological theory and practice, since a) Bulgarians have not contributed to the overall debate of the issues discussed in the current study and, b) the established Bulgarian interpretative framework was presented in chapter 2.

In Chapter 4, the environmental characteristics of the three microregions are presented. Special attention was paid to the pollen data from Bulgaria, which is the only readily available source for palaeo-environmental reconstructions.

In Chapter 5, the sites along Sokolitsa valley have been studied from the first to the third level of analysis and following the theoretical framework set up in chapter 3.

In Chapter 6, the sites along Ovcharitsa valley have been studied in the same way.

In Chapter 7, the sites in Drama microregion have been studied in the same way.

In Chapter 8, the final fourth level of analysis was conducted, in which the data from chapters 4 - 7 were incorporated into a general reconstruction of settlement dynamics and occupational sequence for the later prehistory of the three microregions. Here, the three microregions are put in a broader context of the social networks current in the Neolithic and Eneolithic of the Southern Balkans. The social aspects of prehistoric development in the study area is developed on the basis of my new studies of material culture and society and as a challenge to the prevailing cultural historical approach in Bulgaria. There is an attempt to use the recapitulation of the concept of social practices as providing the basis for social transformation and giving alternative explanatory units such as social networks in opposition to the current dominant notion of archaeological cultures. Landscape as an integral part of the past reality is presented in terms of its constraining and not deterministic role in the settlement and spatial patterns of the study area.

The main points arising from the complex, inter-disciplinary investigations are recapitulated in the Conclusions.

Chapter Two - History of recent investigations

2.1 General stages in Bulgarian prehistoric research

Traditionally, the development of prehistoric investigations in Bulgaria has been divided into three stages (Todorova 1995, Borislavov et al. 2001).

The first period is connected with the enthusiasm and curiosity of nineteenth-century foreign collectors, who were soon followed by Bulgarian "encyclopédiste" scholars. The first formal prehistoric investigations in Bulgaria started with a French expedition's sondage at tell Racheva Mogila in 1898. In the following decades, R. Popov, A. Chilingirov, V. Mikov, G. Kacarov, and N. Koichev made small-scale surface surveys and excavations. Palaeolithic cave settlements and tells from the Neolithic, Copper and Bronze Age were the main focus of interest for those scholars, none of whom was an educated archaeologist. Stray finds and artefacts from field surveys formed the basis of numerous local collections, most of which were united in 1924 to establish the National Bulgarian Museum. Interesting objects started to be classified and, gradually, a primary typology of prehistoric artefacts was established. The results of fieldwork investigations were mainly published separately for each site or expedition but more general reviews of prehistoric finds, houses and tells also started to appear (Mikov 1928, 1929, 1933, 1939). This was the period of random surveys and excavations with poor documentation and controversial methodology. In this period, one of the biggest mistakes in Bulgarian prehistory was made that misled many authorities in European prehistory and remained in currency for almost half a century. The lack of stratigraphic observation and not very precise pottery typology were the reasons for confusing EBA pottery shapes with Middle Neolithic ones. Thus, for a long time, the Neolithic period in Bulgaria was believed to be contemporary with Troy I and was one of the arguments for the short chronology in European prehistory.

The second period started in the late 1940s and lasted almost thirty years. Its formal beginning is marked by the publication of J. H. Gaul's book "The Neolithic period in Bulgaria" (1948), which was an attempt to overview the results of all the prehistoric investigations from the preceding period. The American archaeologist summarized and compiled the known evidence, differentiating for the first time in the Bulgarian history of research, periods and regions with similar artefacts. He also started a practice of naming cultures, which, in the following decades, led to a redundant plethora of differently named phases and periods for one and the same features spread over large areas.

During the second period, more systematic prehistoric studies were made in both field investigations and post-excavation research. The former consisted of consistent excavations of Palaeolithic caves and prehistoric tells and the gradual application of the stratigraphic method. The latter was mainly oriented towards the relative chronology of Bulgarian later prehistory, its synchronization with the Aegean and Anatolia, and hence its European context. Attempts to improve and develop the preceding typological approach to various artefacts were also made (Popov 1932/34).

In 1947/48, the Bulgarian Academy of Science was founded. One of its institutes was the National Archaeological Institute with Museum that merged the previous Bulgarian Archaeological Institute and National Archaeological Museum. It was soon followed by the establishment of a national network of local museums. The Institute and museums benefited from centralized funding and carried out and controlled all the archaeological investigations in Bulgaria. In 1956 were published the formal regulations for field surveys, sondages and excavations. The state stimulated and funded large-scale research and rescue excavations of numerous archeological sites.

The National Archaeological Institute and local museums facilitated many new field investigations and post-excavation research. Current periodicals and other journals were always available for publishing annual reports, articles, studies or monographs. During the 1970s, there was a boom in new archaeological periodicals – Razkopki i Prouchvania, Studia Praehistorica, Interdisciplinarni Izsledvania, etc.

In the early 1960s, one of the biggest contribution to European chronology was made by G. Georgiev, who established the Karanovo chronological system, according to the data of the stratigraphic sequence of tell Karanovo in Southeast Bulgaria. It consisted of a sequence of 12.40m-thick sediments from the Neolithic, Copper and Bronze Age, which Georgiev separated into seven chronological levels (Georgiev 1961). Karanovo I-IV were related to the Neolithic, Karanovo V-VI to the Copper Age and Karanovo VII to the Early Bronze Age. Georgiev used mainly pottery shapes from the long-term excavations at Karanovo tell to create the sequence and argued that, despite some similarities between the ceramic forms from the Middle Neolithic and Early Bronze Age, in fact, they belong to two distinct periods, separated by a millennium of continuing human occupation. The Karanovo sequence gave opportunities for comparison of pottery shapes with the

neighbouring areas and for synchronization of contemporary phenomena. The arguments for the short chronology in European prehistory were seriously threatened. Several attempts to develop and refine the Karanovo chronological sequence were made afterwards but the general terms are still valid (Todorova 1995, Nikolov 1998).

The last research stage that continues up to the present can be defined by the interdisciplinary, mature stage of investigations of Bulgarian prehistory in which contemporary archaeological trends and methods are critically applied. This was a time of many intensive excavations, international joint projects and some general monographs.

Palaeolithic investigations reached their peak in the last 30 years. A small group of Bulgarian archaeologists trained at the Jagellonian University in Kraków started to excavate early prehistoric sites, strictly following the contemporary methods of excavation and recording. The data from previous investigations was reconsidered and complemented with new evidence. Middle and Late Palaeolithic occupations were recognized in several caves in the Stara Planina and the Rhodope Mountains (Ivanova & Sirakova 1995).

The 1970s were a period for entire publications of some of the long-lasting excavations of tells (Todorova et al. 1975, 1976; Raduncheva 1976; Georgiev et al. 1979). They were the first attempts at a complex, analytical study and were considered as signs of a new, developed stage of archaeological research.

The majority of publications, however, did not differ much from the pattern of the 1960s. Their main contribution was to increase the bulk of known sites and artefacts that, at the beginning of the 1980s, formed a substantial amount of empirical data. The paucity of systematic evidence and the prevailing ideological agenda predetermined the selectivity of archaeological debate – e.g. the relative chronology of the Karanovo I culture, the character of the Karanovo IV culture, or the indigenous origin of prehistoric cultures in Bulgaria.

One of the most significant results of prehistoric research during the 1970s was the discovery of pre-Trojanic level at one of the Bronze Age tells in Southeast Bulgaria – tell Ezero. The importance of this Bulgarian evidence for the establishment of European later prehistoric chronology became evident for the second time after the publication of the Karanovo sequence (Georgiev et al. 1979).

In 1977, a Problem-oriented Group for Interdisciplinary Investigations was founded that was supposed to coordinate the joint efforts of archaeologist, botanists, chemists, geologists, physicists and physical anthropologists committed to archaeological investigation. The outcomes of the intensive interdisciplinary investigations were a few general and numerous short, specialised publications. The most significant were the monograph on ancient metallurgy in Bulgaria (Chernikh 1978); the systematization of plant remains (Dennell 1978, Lisistina and Filipovich 1980) and the C14 chronological sequence of some of the most important prehistoric sites (Boyadziev 1995).

Two major monographs appeared in the late 1980s and the early 1990s that corresponded to the research necessity for integration and the coherent interpretation of the huge mass of empirical data accumulated over almost 100 years of prehistoric investigations in Bulgaria (Todorova 1986; Todorova and Vajsov 1993). Todorova summarized all the available Neolithic and Eneolithic evidence, revised many obsolete concepts and tried to present a vigorous picture of prehistoric life in present-day Bulgaria.

Balkan archaeologists from the neighbouring countries referred to Bulgarian data in their general studies (Milojčić 1949; Garašanin, M. V. 1961; Berciu, D. 1961). There were also publications of similar archeological evidence that appeared beyond the borders of a single Balkan country, which stimulated various explanations for their nature (e.g., Barker 1985). As a general trend, there is no consensus about the names, sequence and relative chronology of similar data across the Balkans. However, there is common understanding for some of the archaeological monuments distributed over more than one Balkan country (e.g. the Gumelnitsa culture, also known as K-G-K VI). Balkan regionalism in archaeological studies was (Harding 1983) and still is valid for the majority of Bulgarian researches and non-Balkan archaeologists continue to be the scholars to study Southeast European archeological data from a more general perspective (Bailey 2000, Chapman 2000).

During the last thirty years, several long-lasting international expeditions have been active in Bulgaria, which provided a good opportunity for the exchange of ideas and expertise (e.g., Goliamo Delchevo, Ezero, Diadovo, Yunatsite, Karanovo and Drama). A few foreign archaeologists were given the possibility to work in Bulgaria as well (e.g., Dennell, Chernikh, Hänsel and Parzinger). They were supported during their stay in the country but the effect that their final publications had in Bulgaria was controversial. Some studies were criticized but used (Hänsel 1976, Parzinger 1993); some remained the only ones up to now (Chernikh 1978), while others were in very limited, academic circulation (Dennell 1972, 1978).

Political changes in Bulgaria in 1989 were followed by a global stagnation of the entire society. The archaeological

investigations were not directly affected but soon the state subsidy was in sharp decline. Planned and regular excavations were not possible any more and international expeditions and rescue investigations were the only archaeological activities.
The main financial support was from state and international infrastructure and rescue projects that enabled investigations along the line of pipes and highways. Surface survey was the main type of investigation and full excavation of sites was undertaken in only a few cases. There was a substantial loss of information since a) the majority of the sites were partially excavated and, b) the surveys were not made as grid-oriented surface investigations.

In summary, prehistoric investigations in Bulgaria during the last 30 years were dependent on the political and financial conditions of the state. Modern interpretative concepts and field techniques were hardly accepted and developed in contemporary researches. A positive characteristic of this period was the research response made through various monographs and publications to the interpretive demand in Bulgarian prehistoric investigations, in which Bulgarian archaeological evidence is organized in a set of explanatory models. The specifics of these explanatory models is the topic of the next section.

2.2 General interpretative trends in Bulgarian prehistory

The structure of the following statement is predetermined by the inconsistency of approaches in Bulgarian prehistory, as well as by the lack of balance between interpretative ideas and the type and quantity of archaeological evidence. First to be presented is the only formal explanation of processes of change during later prehistory in Bulgaria, followed by a sequence of summaries of general studies of the Neolithic, Chalcolithic and Bronze Age. Finally, an overview of the approaches to settlement and burial data in connection to their possible social aspects will be presented, with an emphasis on indicative case studies.

The generalization of the processes of transformation and development during later prehistory follows one and the same pattern of scattered claims within more general or single case studies and is entirely subordinated to the model of ethno-cultural change.

In a series of overview articles of prehistoric studies development in Bulgaria, Todorova (1975, 1980, 1981) tries to identify a trend in the overall prehistoric development in Bulgaria by reconciling the autochthonous and migration concepts. The basis of a Marxist ideology – as the "driving force" of each society - was integrated with the idea of the movement of people, objects and technology in an attempt to explain the variety of archaeological evidence dating from 6200 BC until 1200 BC. These studies comprise an eclectic mixture of (1) Marxist postulates; (2) the claims of other Eastern European archaeologists; (3) Kossinna's / G. Childe's culture-historical concept; (4) some archaeological evidence from Bulgaria and (5) general instructions for future archaeological investigations and interpretations. The failure to provide a consistent theoretical model should not be separated from the contemporary ideological situation and the difficulties of operating within the limits of the formal interpretative framework. In summary, Todorova, quoting Chernikh (1979), accepts prehistoric development in Bulgaria as a pulsating historical process with four major culminations – the Early Neolithic (end of VII- middle of VI mill. BC), the Late Eneolithic (end of V- beginning of IV mill BC), the end of EBA (second half of III mill BC) and the end of the LBA (around XII mill BC). Each of these peaks is characterized by an intensive demographic increase; a boom in metalwork (only for the second and the fourth); the integration of cultural processes leading to large, typologically homogeneous complexes; a readiness to accept and to transmit influences from and towards the neighbouring cultures; and, finally, a general breakdown in ethno-cultural closure (Todorova 1980). Although I am not aware of any recent references to this model, it appears to be still valid, since almost 30 years after its introduction no alternative has been suggested yet.

Neolithic

The Neolithic occupation of the Balkans, including Bulgaria, is put in the context of the demographic boom in the Fertile Crescent at the beginning of the VII millennium CAL BC that led to the colonisation of new areas to the North West. Since at the time of the publication of the first monograph on the Neolithic in Bulgaria, the data from South Bulgaria (Thrace) were still inconsistently published, the main claims for Neolithic society were based on evidence from the areas North of the Stara Planina. The racial type that inhabited this area was a mixture of the Mediterranean type (coming from the South), the local Mesolithic type and the Proto-European type (coming from the North East) (Todorova and Vajsov 1993). Although not clearly stated, such a claim was an attempt for reconciliation of migrationist and autotochthonist theories and archaeological evidence was "adjusted" to support such a postulated origin of the Neolithic population in North Bulgaria.

The smallest social unit was a three-member family and from three to five such families used to occupy the Neolithic settlements. Environmental resources were accepted as a limiting factor for the population number on these settlements. These single families were united in

larger family formations and were the major production forces of Neolithic society. The evidence from the Late Neolithic settlement of Usoe suggests that there was seasonality in the family gathering – during the summer, the small families were living in light buildings, while, in the winter, the extended families occupied large semi-sunken houses (Todorova and Vajsov 1993).

The Neolithic community was governed by a paramount and there were priests as well. This claim was based on the evidence from the Durankulak cemetery, where "exceptionally wealthy" burials were found (Todorova and Vajsov 1993:239).

It was concluded that the Neolithic society in Bulgaria was not differentiated, since its economical base remained undifferentiated (Todorova and Vajsov 1993:240).

Copper Age

The Eneolithic population in Bulgaria was believed to derive from the local Neolithic communities. The basic social structure was the small family – a unit of several families has also been inherited from the preceding period but in contrast to the Neolithic, the big family formations were claimed to have some economical independence within a community unit that inhabits one settlement (obshtina) (Todorova, 1986:215). The role of exogamous marriages during the Copper Age was especially underlined, as well as the greater settlement density. Some of the settlements were six to eight km apart from the next site, which made the investigator infer that there was regulated kin-based tenure of the land, which very often caused disputes over land tenure (Todorova, 1986:215). The major productive force in both cultivation and stock-breeding was the whole community. This claim is based on the evidence that the crop was kept in one main store and there was no data for individual possession of cattle or other animals in the houses. The crop was divided at the end of the summer; and the same collective consumption was claimed for large herbivores killed in a collective hunt (Todorova, 1986:216). Some craft specialization also started during the Copper Age but, in general, the economy of the Eneolithic society was of self-subsistence type. Social differentiation was based on gender and age differences, in which the adult males (20-37 years old) held the highest social status and the children of age 6-7 and females up to 15 years old held the lowest status. On the top of the social hierarchy was a male paramount. A special social stratum was involved in the ritual activities of the society.
These conclusions are presented in a grand narrative of the main diachronic changes all over Bulgaria (Todorova & Vajsov 1993).

Bronze Age

Bronze Age investigations in Bulgaria suffer a great lack of general studies in comparison to the preceding periods. There is only one article published in 1975 (Katincharov 1975) - before the main monographs on the Neolithic and the Copper Age in Bulgaria - which contains claims challenged in the later studies of the Chalcolithic. For Katincharov (1975), the development of Bronze Age society had three major characteristics :– a) plough agriculture, that leads to: b) the accumulation of surpluses and to: c) craft specialization (as the second major division of labour), which three years later were claimed as being initiated already in the Chalcolithic (Todorova 1978). This is not the place to analyse in detail why and how Katincharov's early study remained the only one that discussed BA society in its full course of development, thus leaving many debatable issues unsettled. The only brief comment that cannot be omitted is that the research priorities of Bulgarian BA archaeologists towards the emancipation of the "Bulgarian Bronze Age" were prompted by the pre-C14 confusion of synchronising the Balkan Neolithic (Karanovo III) with the Western Anatolian Bronze Age (Troy) and the subsequent exhaustive chronological debate (Mellaart 1960; Garašanin 1961: Renfrew 1971), as well as by the widespread concept of the destructive invasion of steppe nomadic groups at the end of the IV mill. BC (Gimbutas 1979). Social aspects never became a research issue in Bulgarian later prehistory, although they enjoyed some random short comments within fairly large publications of some tells (e.g. Ezero) or settlement pattern studies (e.g. Maritsa-Iztok). Although Katincharov's concept is neither discussed nor up-dated, it still is the only formal discussion of BA society that should be summarized here. The BA development was sustained by Engels' concept of the "social division of labour", with increasing surpluses leading to property inequality (Engels 1949). On a regional level, this inequality resulted in inter-communal and inter-tribal conflict and hence the development of fortifications. On a site level, increased labour productivity favoured individual household development rather than the previous kin and communal social order. The dominance of males is claimed on the basis of his leading role in commodity production, patrilocal marriages and the family property handed down from father to son. Finally, the LBA was the time of intra- and inter-tribal unification, as well as of deep property and social inequality, in which priests, chiefs and military commanders possessed most of the commodities in circulation (Katincharov 1975). As in all studies mentioned so far, archaeological evidence was not employed to support such claims.

During the course of this study, a long article on the BA in Upper Thrace was prepared (Leshtakov, in press). Unlike

Katincharov's study, a wide variety of archaeological evidence was introduced and interrelated, thus showing the diversity of social practices in the Bulgarian BA. The lack of formal theoretical background, however, led to a failure to incorporate these important data into some kind of coherent social reconstruction.

Burials and society

Burials or, more specifically, their covering in the form of an impressive mound, were the first to attract amateurs' and professionals' interest in the last decades of the 19th century. Almost 14,000 barrows and more than 70 flat cemeteries are known so far in present-day Bulgaria. Despite that fact, there is no unified terminology and commonly agreed understanding of burial phenomenon, which is due to the lack of tradition in discussing theoretical and practical aspects and issues in Bulgarian burial archaeology. Field techniques and post-excavation interpretations have depended to a great extent on the excavators' background (e.g. Panayotov). However, if a dominant research pattern could be identified, it would be based upon a culture-historical, rather than a contextual or a social, model.

Later prehistory funerary remains were sporadically investigated since 1929 up to the early 1970s. There were both random barrow excavations or the excavation of grave/s within tells and settlements (Popov 1931/32; Georgiev and Angelov 1957). A few other burial sites were found by chance, including the most significant discovery of the Varna cemetery. Until that time, the interpretation of burial evidence did not go beyond a simple reflection of religious beliefs and superstitions.

The sensational discovery of the Varna cemetery, as well as of several other extramural Chalcolithic cemeteries in northeast Bulgaria during the early-mid 1970s initiated various research activities. A promising beginning of broad international debate about the place of Varna in European prehistory was made in 1976 with the organization of an international symposium on the Varna cemetery and the problems of the Chalcolithic (published as Studia Praehistorica I (1976)). Since that year, the ongoing discussions over "the Varna case" has produced more than 60 different studies and articles, mostly written by foreign archaeologists. The Varna discovery inspired a few Bulgarian archaeologists to look at burial data in a broader social, economical and ideological context. Their interpretations were nationalistic (Ivanov 1976) or materialistic (Todorova 1978), which was anticipated considering the primary emotions of national pride and prevailing Marxist ideology at that time. But it was unexpected that the interpretations had not changed much through time, despite the continuous accumulation of data and new trends in archaeological theory (Ivanov 1976, 1988, 1991; Raduncheva 1989; Todorova 1978).

At present, Neolithic cemeteries in the Balkans are known only from the area of the so-called Hamangia culture. All of the rest of the Neolithic burials derive from the domestic arena. Bulgaria is not an exception of this pattern, the best example of which is the recently published Durankulak cemetery (Todorova 2002) and newly developed analyses of burials within tells (Buchvarov 1994).

Apart from Hamangia cemeteries, the appearance of extra-mural mortuary areas in Bulgaria was claimed to occur during the middle Eneolithic (Todorova 1978) but the only certain evidence derives from the Late Copper Age (Todorova 1978; Raduncheva 1976; Ivanov 1976). The Eneolithic cemeteries known so far from Bulgaria are mainly spread across the Northeastern part of the country. Although new data has accumulated in the last 20 years, present interpretations of Eneolithic mortuary practices are based on four major extramural cemeteries – Goliamo Delchevo, Vinitsa, Devnia and Varna. The social interpretation of the first three cemeteries claims male dominance within the mortuary area, since the number of so called "cenotaphs" was added to the "real" male graves. The "cenotaphs" are body-less graves that have received many different interpretations. In the general study of Eneolithic burial rites summarised here (Todorova 1978, 1986), they are accepted as burial of males that have died far from their home settlement. The argument for a "cenotaph" affiliation to male graves is based on the quantity of the grave goods, whose percentage is almost equal in both grave types (34 for males, 30 for cenotaphs). The number of grave goods is also believed to reflect social inequality – a finding which explains the presence of graves without offerings, as well as any difference in the characteristics of the grave goods set. The predominance of adult females among the feminine individuals led to the conclusion of "the subordinate role of the women, who were assigned a place in the social hierarchy only after they became mothers" (Todorova 1978:76). Women were linked to the domestic area, while males were assigned a leading economic and social role. However, after the productive age (17-30), females continue to gain status, while males started to lose their dominant place, as reflected by the decrease in the number of offerings in graves with males over 40. On this basis, it was inferred that there was neither matriarchal nor patriarchal social organisation but rather it was "dictated by objective conditions" (Todorova 1978:77). Such social differentiation based only on sex and age was underlined to be valid for the inland territories in contrast to the coastal communities, that were felt to display more prominent social differentiation. The distinction in position of the deceased was explained by tribal (ethnic) differences. The latter was suggested as a result of, and evidence for,

exogamous marriages, which led to individuals being buried according to their origin tribal rite within a cemetery of their spouses' tribe. The Black Sea littoral communities gained their special interpretative status after the discovery of the Varna cemetery. The abundance of gold, metal and exotic objects in the graves was accepted as evidence for the existence of a male stratum that possess great wealth and power. This privileged status was the result of better economic conditions provided by the strategic position of the Black Sea coast in contrast with the inland area, where "the traditional social structure as reflected in burials, remained intact in spite of the profound changes at the close of the epoch brought about by the metal boom and the rapid economic growth" (Todorova 1978:77). This territorial separation leads to an internal contradiction in otherwise related interpretations of the Varna phenomenon as a complex social formation. On the one side are the hypothesis for a) proto-state organisation, in which the Varna cemetery was related to the Varna pile-dwellings - claimed to be an administrative, manufacturing and commercial centre (Ivanov 1988); and b) royal power associated with the so-called Varna culture, for which deep social differentiation was claimed (Todorova 1995). On the other side are the hypothesis for a) pre-state organisation consisting of an upper task-related notable class and a lower agro-pastoral class (Lichardus 1988); and b) a powerful tribal union whose elite members were buried in Varna as its centre and in accordance to their regional practices (Raduncheva 1989). All of the authors claim social complexity but, in fact, treat the Varna cemetery in isolation from any kind of social process. The above-mentioned territorial separation is just one side of this isolation. The continuously supposed relation between the Varna cemetery-Varna pile-dwellings and other Varna culture sites reduces the area that may contain some relevant social information and hence fails to provide conclusive reasons for why and how phenomena like Varna were possible. Putting Varna in a broader context is undoubtedly an advance in our understanding of the complex Late Copper Age reality but none of the commentators has supported with concrete evidence any pre-Varna social dynamics that would result in such deep social stratification.

Meanwhile, there was a strong interest in the Varna cemetery and its context from some Western archaeologists (Renfrew 1978; Chapman 1991; Lichardus 1988, 1991; Price 1993). All but one (Lichardus) of their interpretations have been not welcomed, discussed or even known among the majority of Bulgarian scholars; nevertheless, they considered newly gained empirical data from Bulgarian sites, as well as attempting to implement explanations for different modes of funerary practices.

The merit of the Varna discovery was that the significance of burial data was recognized and accepted by Bulgarian archeologists. They started to look deliberately for cemeteries from different periods and in different regions. More attention was paid to age/sex differentiation, grave goods, position and orientation of the deceased than before. But the analysis usually stops with some detailed description of graves/cemeteries and some dubious ethnographic or possible exact archaeological parallels.

One step beyond that level of interpretation was made in I. Panayotov's 1989 book "The Pit-grave culture in Bulgaria". He collected and unified all the known data up to 1987 and provided a full catalogue of pit-grave contexts and the distribution of barrows across modern Bulgaria. The monograph presented a very good theoretical and empirical knowledge of the Russian data, as well as the burial evidence from the neighbouring countries, which most likely pre-determined Panayotov's culture-historical approach to Bulgarian barrows. The steppe origin of the burial mounds was not questioned but a series of atypical features (e.g. cremation, lack of pits, presence of pottery) prevented the investigator from making a claim for an invasion and a new name was suggested – the Lower Danube variant of the Pit-Grave culture. The latter was summarised as follows:

"at the end of the IV mill. BC…..that coincides with some climatic changes, Indo-European stock breeding nomadic tribes with probable patriarchal organization settled at different places along the river Danube from the Northeast into the areas of the local EBA cultures or spread into their territories; and continuously develop in North Bulgaria (mostly in its Eastern part); and interact with the local population, playing the role of a "mediator" in the creation of "contact continuity" in the new system of cultural entities in both directions East-West (Danube-Dniestr) and North-South (North-South Bulgaria); and become a cultural component in the early stages of the Thracian genesis and in the historical perspective (archaeologically traceable in the barrow tradition), but within other systems of burial practices" (Panayotov 1989:50-51; my translation).

This approach left many unanswered questions, such as the conceptualization of time and space in the barrows and their landscape perspectives, thus becoming one of the problems that need an up-dated reconsideration.

In a series of studies, Nikolova (1992, 1995, 2002) extended the empirical knowledge of the context and nature of Bronze Age burial practices, without presenting any new ideas for their interrelations and general explanations.
The publications of LBA cremations (deriving mainly from Northwest Bulgaria and the Western Rhodopes) and flat

cemetery inhumations do not discuss any kind of data that could be summarized here as bearing social information.

The striking variety and diversification of burial practices during the course of the BA has been studied only in terms of chronology and cultural affiliation. An indirect form of social commentary on mortuary data concerns the numerous claims for inter-cultural relations concluded on the basis of mixed or atypical burial evidence (Panayotov 1989, Alexandrov 1994).

In summary, burial studies in Bulgarian archaeology have not yet transcended the reflectionist level of interpretation. Despite the recent introduction of Western aspects of mortuary studies (Alexandrov 1996, Nikolova 2002), the cultural historical approach remains the main interpretative framework for burial data.

Settlements and society

Settlement studies started in 1898 and continue to be dominated by tell excavations. Several Bulgarian and a few foreign archeologists have used different survey techniques up to the late 1950s, when the stratigraphic method was introduced (Georgiev 1964). During the last 50 years, field methodology was developed and refined and now tells are excavated in "building horizons". They are usually displayed on the control profile, which enables easy and quick reference to them. Building horizons are believed to contain contemporary features and to represent one coherent settlement. Temporality within a horizon is comprehended as different phases of the features and is seen in terms of floor or plaster renewals. However, this relatively precise technique, as well as the abundance of archaeological material from the sites, did not lead to a proper interpretation of the tell phenomenon. Following the dominant culture-historical approach, tells and their horizons were attributed to different phases of different archaeological cultures. The Bulgarian concept of tells has changed little in the last 50 years and could be easily summarized in few sentences.

The first tells appeared in the early Neolithic in Thrace and Central South Bulgaria and spread to Northeast Bulgaria at the beginning of the Chalcolithic (Todorova 1978, 1986, 1994). Life on tells continued during the Bronze Age, when some new mound settlements also appeared (Georgiev 1964). Tells were always close to a reliable water supply and on fertile arable land (Georgiev 1964, Todorova 1978, 1995). Their occupants were mixed farmers (Georgiev 1964) with a self-supporting subsistence economy (Todorova 1978). There was no evidence for social differentiation or ranking on tells but, nevertheless, its existence was assumed (Todorova 1978, 1995). Some public (Todorova 1978, 1995) and ritual (Raduncheva 1994, Bailey et al. 1998) activities were also identified on tells.

According to the updated information of Archeological Map of Bulgaria (courtesy of G. Nekhrizov), there are 556 tells spread over Central, Southeast and Northeast Bulgaria. Just 10% of them have been studied and only a few have been fully excavated. The main evidence for spatial organization on tells comes from eight fully excavated tells. Some additional data is available from about 55 partially surveyed ones. The distribution of tells, their emergence, abandonment and re-settling were not properly investigated so far. Prehistoric settlements were plotted on a map in 1978 and there is still no updated version according to new information.

The Archeological Map of Bulgaria maintains records of 500 flat settlements or, as they are called in Bulgaria, open-air settlements. Their possible relation to the tell distribution, the dynamics of their occurrence and the abandonment of tells and flat sites, as well as their mobility and sedentism, have provoked sporadic research interest (Leshtakov et al. 2001 and in press). The suggested settlement patterns, however, follow some general patterns from the Near East and are not very well grounded in local, Bulgarian evidence.

Settlement typology, hence settlement terminology and the identification of prehistoric types of occupation, has not been formally discussed (e.g. mature tells, adolescent tells, tell-like settlements, multi-occupational settlements with horizontal stratigraphy, etc). Settlement pattern studies were reduced to a descriptive reconstruction of the site distribution and rarely included some other type of analysis (e.g. soils and subsistence evidence: Dennell & Webley 1975)). The publications of the totally excavated tells provided a very good database for interdisciplinary settlement studies but again rarely involved any different approaches, such as spatial or depositional studies. Intra-site (contextual) and off-site studies were neither theorized nor applied by Bulgarian archaeologists (cf. Chapman 1989: 1990: 1991). Some inter-site (microregonal) studies were conducted over the last 30 years and are summarized in section 3.3.1.

Social aspects of the domestic arena were paid very little attention by Bulgarian archaeologists, maybe due to the common understanding in Bulgaria that socio-historic reconstructions are possible only on fully excavated archaeological sites (Todorova et al. 1983). Amongst the very few Bulgarian publications that contain some discussion of socio-economic issues at all, I have chosen two case studies as relevant examples of the status of social archaeology in Bulgaria.

The first example is the fully excavated Eneolithic tell of Vinitsa in Northeast Bulgaria, whose interpretation presents a concept-oriented explanatory approach (Raduncheva 1976). Vinitsa society is believed to have been predominantly occupied with stockbreeding, hunting and fishing and, to a lesser extent, with agriculture and gathering. Labour organisation, craft specialization and local exchange of raw materials were practiced by the Vinitsa inhabitants. The basic social unit was the family of two that, together with the grown-up children and their spouses, formed the patriarchal domestic commune (zadruga). It consisted of 10-15 members that used to live in one house. Several zadruga were accepted to occupy every middle-size tell, such as Vinitsa. The data from the nearby cemetery were used as a reflection of the wealth and hierarchical status of the dead. General changes over the Eneolithic were attributed to migration waves and presumably they are taken for granted for Vinitsa as well (Raduncheva 1976; cf. Chapman 1989: 1990).

The second example is another fully excavated site in Northeast Bulgaria – the tell of Ovcharovo (Todorova et al. 1983). This case study is chosen here as one of the very few Bulgarian sites that enjoyed a combination of broad research interests and alternative interpretations. It is also an illustration of how one and the same source data are interpreted in Bulgaria according the cultural historical explanatory framework and by some Western archaeologists applying different approaches to social reconstruction (see p. 25).

The original publication of tell Ovcharovo provides substantial quantities of information on palaeoeconomy (subsistence and exchange), palaeodemography, craft specialization and ultimately social structure. The social organization on the Ovcharovo tell is presented in the usual descriptive manner, with no reference to any specific theoretical mode, except the self-understood official ideological concept of the then communist Bulgaria. It was characterized as a lineal commune that, in the course of biological reproduction, was related to similar social units within a wider exogamous kin. Craft specialization (inner structure), labour pool and collective tenure of community land were claimed to be the major economical characteristics of Ovcharovo society. The institutions of priests and chiefs were also claimed to be present (Todorova et al. 1983).

The criticism of the official interpretative mode in communist Bulgaria falls outside the aims of this short section, since it requires a much more profound and target-oriented discussion. In addition, both Bulgarian case studies cited here were published in the late 1970s / early 1980s, when any concept differing from the formal regime ideology was unthinkable. This puts previous investigators in a non-comparable position with my post-communist education and opportunity to employ alternative explanatory modes. However, both case studies have some important omissions within their own interpretive framework that I shall comment on here in brief.

Raduncheva's interpretation is based on Engels' (1949) social adjustment of Marx's economical theory. The presumed general common-sense knowledge of Engels' study prevents any formal statement of the interpretative approach and blurs the boundary between the theoretical model and the interpretation itself. Later, one encounters more difficulties, whose claims derive from the archaeological evidence and which are assumed on the basis of Engels' notions. The data from the settlement and the cemetery are not cross-referenced and hardly related in a coherent social reconstruction. Although debated, gender relations (e.g. a patriarchal social order is advanced instead of a matriarchal one) were not grounded in the archaeological evidence. Social inequality is turned into a circular argument of social differentiation and its roots are claimed to derive from the preceding Neolithic period, thus leaving social change during the Eneolithic entirely dependent on "outside" factors.

Unlike Raduncheva, Todorova's claims are not clearly related to any formal explanatory mode and obviously rely on some kind of self-evident social process. Although not necessarily irrelevant, the interpretation is divorced from the carefully studied data and the concluding social reconstruction is randomly and selectively related to specific kinds of archaeological evidence. There is no discussion of intra-communal and intra-kin relations (apart from exogamous marriages) and any social change is imputed to abstract cultural change or ethno-cultural transformations (Todorova et al. 1983).

In summary, prehistoric settlement studies in Bulgaria have not exploited their very considerable potential for social reconstruction. Out-of-date explanatory modes still dictate the interpretation of settlement evidence and limit the possibilities for explanation of change and development in later Bulgarian prehistory.

2.3 History of GIS research

Over the last 20 years, GIS applications in archaeology passed through an uneven but generally progressive development. Initially introduced from, and applied in, the USA, this sophisticated computer-aided method remained an important investigation tool for American archaeologists working within and outside the New World. Although now GIS analyses are broadly practiced around the globe, their results are popular mainly within the circle of GIS practitioners. Regional and local meetings (1988, 1989 and

1992) ended up with serious, theoretically-grounded publications of GIS case studies (Allen et al. 1990, Lock and Stančić 1995) but the use of the acronym "GIS" in the titles and sub-titles of these books immediately reduced the numbers of potential readers to the number of people already involved in GIS practice. This strong claim is based on the lack of any post-1990 discussion about the methodological issues raised in the basic source book for GIS in archaeology – a feedback that should come from outside of the circle of GIS followers. The criticism of the environmental determinism some feel is inherent in GIS and its limitations to a sophisticated cartographic tool were debated in GIS literature but subsequently were only rarely reconsidered in more general works on contemporary theory and practice (e.g., Shennan cited in Kvamme 1995: 6). However, GIS applications papers have recently started to appear in journals with a broader methodological content (Llobera 1996; Sanjuan & Wheatley 1999), thus breaking down the charmed insiders' circle.

The present status of GIS of neither highly criticised nor broadly applied is explicable through some of its characteristics. GIS analysis need special equipment, certain usually expensive software, specific management approaches to the broad range of in-put data sources, a huge investment in time for digitising or downloading of the source data and, last but not least, the acquisition of the necessary analytical skills to work with the relatively complicated software for academic purposes.

Major contributions to the attempts to take GIS out of isolation were the volume edited by Lock and Stančić (1995) and the third volume of "The Archaeology of Mediterranean Landscapes" (Gillings et. al. 1999). Apart from the wide range of various GIS applications (e.g. studies that incorporate text data or coinage (Smith 1995), hydrological regime simulations (Gillings 1995) and investigations of population trends (Stančić and Gaffney 1999)), these volumes contain also analytical chapters on the problems, achievements and perspectives of GIS (Harris and Lock 1995) and GIS and Archaeological Theory (Witcher 1999). While Harris and Lock were summarizing the trends and the gradual popularization and diversification of GIS applications, Witcher raises more questions than answers in a stimulating discussion that "attempts to reconcile the abstract and scientific nature of GIS with the more subjective and phenomenologically grounded approach to the past" (Witcher, 1999:19).

Recently, Wheatley and Gillings (2002) have a chosen different approach to introduce the GIS technology in archaeology to a wider audience by publishing a textbook for the technological and analytical abilities of GIS, summarizing the variety of GIS applications in a coherent methodological structure.

The GIS application in the current thesis is following the well established traditions in regional studies (Chapters in Allen et al.1990 and Lock and Stančič 1995). Other issues that are going to be of concern in this study - such as human - landscape, human – nature relation, the social aspects of the landscape - as well as some more broadly discussed theoretical issues as spatial behaviour, time – space relations, have been continuously debated in GIS literature; however, much of this debate has remained outside the mainstream theoretical discourse.

GIS practitioners are fully aware of the limitations of the model, which in fact are shortcomings of the data source or some specific algorithm that usually make them cautious in the final interpretation. Moreover, the most fiery promoters of GIS have pointed out "…this volume is sparked by the potential of GIS for solving archaeological problems. The critical warning is that the problems are indeed archaeological and the method – powerful as it is – is for us to use."(Allen et al. 1990: 386). What I was trying to say in this brief GIS section is that GIS far from being a universal interpretive tool, yet lacks proper exploration and evaluation of its potential.

Chapter Three - Theoretical and Methodological background

Landscape, material culture and society are the three major components of this research, as well as the microregional aspects of such a study. Landscape, material culture and society are three of the possible objects of studying the past and each suite of studies has multi-dimensional research potential, a solid theoretical background and a powerful interpretative framework of its own. Most often they are applied separately or in pairs and only in recent years have they become unified as a complex approach to archaeological data (Chapman 2000). The current chapter does not aim to summarize the variety of applications of three approaches but to emphasise those aspects of landscape, material culture and society that are relevant for the current study.
Material culture study is the only one among the three that has been a research focus in Bulgarian archaeology, mainly in the identification, recording and naming of material culture, rather than its explanation and interpretation.

3.1 Landscape archaeology

3.1.1 What is landscape archaeology?

In the "New Oxford Thesaurus Dictionary" (2000), there are 14 meanings or usages of the word "landscape" – countryside, topography, country, terrain, environment, outlook, view, prospect, aspect, vista, panorama, perspective and sweep. It is not a surprise, then, that recent landscape studies in archaeology usually start with what landscape is (e.g. Crumley and Marquardt 1990) or is not (e.g. Ingold 1993). A general review of the landscape literature reveals a certain degree of tolerance for the possible approaches of studying the landscape. An attempt to systematize the rapid diversification of landscapes in the recent years has been made by unifying them as "constructed", "conceptualised" and "ideational" landscapes, within which four themes had been recognized – landscape as memory, landscape as identity, landscape as social order and landscape as transformation (Ashmore and Knapp 1999). In brief, constructed landscapes imply some physical form of human participation in their interaction with the surrounding landscape; in conceptualised landscapes, certain natural features are given meaning through social practices; and ideational landscapes cover the broad range of landscapes as sacred, symbolic, embodying power, etc, that constitute, approve and perpetuate the inherited or/and achieved meaning of encoded and constraining landscape. There are many cross-references and links to be found between these systematized landscapes and the four themes. Such cross-references are possible insofar as the major concept in LA is accepted as - the landscape is an active element of the human past (and present), with multiple meanings for its inhabitants.

Although too general, this statement summarizes the various approaches in LA seeking for long-term human/landscape interrelations. In the following pages, it is my intention to extract the issues within the extended LA interpretive framework that have some relevance for the current study.

First of all, we need to discuss the so far unsettled interrelation between landscape and environment. An arbitrary referent in distinguishing between the two is the human seen as exploiter, actor, participant, perceiver, dweller, constructor, controller, etc. There are three options that modern scholars have recognized in their studies of landscape and environment with regard to humans – landscape is environment, landscape is not environment and the landscape/environment link is objectified by humans.

The idea of landscape understanding as environment dates back to the period of the mid-1950s - late 1970s, when the bulk of archaeological studies treated the environment in terms of certain ecological conditions. These were the early settlement patterns studies that later evolved into what is now called the eco-systems approach in archaeology (Clark 1953). These were also the palaeoeconomy studies initiated by G. Clark (1939, 1953) but usually connected with E. Higgs and his followers (Higgs 1972). Both approaches have been heavily criticized for their "deterministic" nature, identifying the environment as the major force shaping cultural development and social change.

The second trend, in which the landscape in not the environment (a set of ecological variables), has been developed in England and America after the pioneering works of Hoskins and Jackson (Hoskins 1955, Jackson 1970). It is considered as the beginning of the "real" landscape archaeology in which the idea of the landscape as a cumulative palimpsest is central (Chapman 1997). At present, this trend follows the notion that landscape can be (and is) designed, manipulated and controlled and it is studied as such in archaeologies of landscape as power, sacred (ritual) landscape and social landscape (Thomas J. 1991). A crucial breakthrough in recent landscape studies in archaeology is the increasing consideration of vernacular or non-monumental landscapes (Chapman 1997, Van Dommelen 1999) that questions the so far prevailing "sacred" orientation in LA.

The development of the concept of landscape archaeology was enriched by the progress of studies in human

geography. In the context of Tuan's and Cosgrove's rethinking of landscape (Johnston 1998), the landscape/environment link in archaeology was to be reconsidered in the terms of human comprehension. Tuan's claim that "the environment is a given piece of reality that is simply there, while landscape is a product of humans' cognition" (Tuan 1979:90,100) introduced humans that transform environment into landscape. In LA, this idea evolved in two approaches in the landscape study – the explicit, where cognition is a key element, and the inherent, that claims no difference in real and perceived landscape (recently defined as such by Johnston 1998). The common attribute of both approaches is perception. In the explicit variant, it assumes subsequent preferences and decision making while, in the inherent variant, the "lack" of perception assumes a more intimate link between the humans and their surroundings.

My own starting point (see next section for discussion of some particularities of the Bulgarian language) is to envisage landscape and environment as an entity, in which a landscape with its encoded meanings and symbols does not lose its environmental characteristics. This statement challenges the English language division between landscape and environment as being universal and questions the role and nature of perception in human minds that do not share such a kind of division. In the original formulation of the explicit and inherent approaches, experience is opposed to cognition (Johnston 1998:64), while, to me, experience leads to cognition and hence to some kind of action within the landscape (as already pointed by Renfrew 1994).

These possible actions are the second issue within landscape studies on which I shall focus – the practices that have taken place within the landscape that subsequently led to the naming of landscapes as sacred, social or embodying power.

All of the landscape studies share one general understanding - it was the humans that gave meaning to their surroundings either through constructing or conceptualising the landscape. This process of "giving sense" was highly contextual and it was to (re) produce, (re) negotiate or maintain the social and/or cosmological order. The landscape within which people are born, live and are buried is the arena through which its inhabitants constitute, mediate and transform their worldview(s). Social practices are practices through which (re) shaping of the world could be achieved. These practices can be named as feasting, deposition, pilgrimage, enchainment, etc, and can be seen in examples such as Barrett's redefinition of the horizon through burial mound construction (1999), Bender's empowering of the stones (1992) or Tilley's walking within the landscape (1994). Hence, the major task of LA is to identify these practices insofar as they are inscribed onto the landscape. The modern perception of past landscapes can only be valid "if archaeologists remain fully aware of their own cultural or historical configuration or mediation" (Ashmore and Knapp 1999:20) and if archaeologists "seek to "reanimate" a past world, and in the process to identify the ways in which it differed from our own" (Thomas 2001:181).

Another word that enjoys much attention and various definitions in LA theory is place. Akin to the environment/landscape interrelation, the space/place relation is made by humans. The majority of LA archaeologists develop their concept and interpretation of place in regards to Tuan's (1977, 1978) insight that "spaces are transformed into places through the acquisition of definition and meaning" (Chapman 1988, Tilley 1994). Recently, another notion of place was suggested by Thomas (2001) as " a place is always disclosed, or comes into focus, as a place", following Heidegger's claim that "a place is always a place of something"(Heidegger 1962: 136 cited by Thomas 2001). Whatever the concepts for initial constitution of place, all of them seemed to agree that place has a meaning. In archaeology this meaning has been mainly discussed in its relation to sites and monuments (Chapman 1988, 1989, 1991, 1994, Tilley 1994, Barrett 1994, 1999). The approaches of studying the "landscape meaning" of the sites vary significantly. For some, the human/landscape relation cannot be inferred from the sealed moment of the construction of certain community site/monument and advocates looking at the "historical process which through the framework of tradition interweaves community and landscape and thereby creates the cultural landscape" (Evans 1985). For others, settlement study reconciles landscape and settlement archaeologies, as long as a) a settlement cannot be interpreted regardless its landscape and, b) a settlement as being a (focal) place of various territorial and social practices may contribute to studies of other places within the landscape (Brück and Goodman 1999). C. Tilley favours the phenomenological approach (1994), in which personal experience is central to the understanding of landscape. By contrast, Frazer seeks for "the strategies by which narratives of place and biographies of the landscape itself are implicated in the making of the self and the perception of being in place"(Frazer 1998:206).

A more complex interpretation has been attempted by Chapman, who incorporated a number of approaches from human geography, social theory, anthropology, culture studies and landscape history in a series of studies of prehistoric settlements and cemeteries in the Balkans. Chapman has argued that, through being a landmark and/or a time-mark, a place accumulates meanings and hence achieves and increases its place-value. The specific place

value governs the link between people and places that leads to patterns of (re) use, abandonment or avoidance of certain places. These patterns are an integral part of a wider strategy of being and legitimising self in the world in regards to the past. In the case of a site or a monument, the link people/places is reinforced by the link people/objects where the ancestral things and places form a powerful combination, which presences the past. Hence, any action in community's social reproduction within an area that once was the ancestral area refers to or incorporates the past sites and monuments and constitutes them as arenas of social power. The time-space sequence of arenas of social power as evidence for successful social reproduction or social change is related to the form of the (past) site and monument, as well as the overall design of the landscape. The spatial order within a site and within a landscape reveals the changing or recurrent patterns of social reproduction (Chapman 1989). In the case study of the social construction of prehistoric landscapes in Eastern Hungary, Chapman (1997) explores the dialectical connection between vernacular and political landscapes, as defined by Jackson 1984. The former is the landscape of the inhabitants (re) ordered and (re) negotiated through time, the latter is the landscape of social power created by humans for humans. The vernacular landscape can be seen as "landscape in flux", while the political landscape has a highly formalized spatial order and meaning. According to my view, Chapman's approach is more flexible then Barrett's "inhabitation" concept in which "the inhabited place is known with reference to past experience and by action at that place which are played off against a wider "reality" of social continuity and order"(Barrett 1999:259). This is not to deny the "inhabiting" or "dwelling" perspective in LA that has been broadly discussed in the recent landscape studies (Ingold, Johnson, Barrett, Thomas). Rather, it is to advocate a cross-referenced approach in which tensions between "different" landscapes can be traced and explained in terms of the ever-going social transformation of the landscape.

Finally, one more contribution to social construction of the landscape, which is going to be considered here is recently developed idea for enclosing space (Ingold 1993). According to Ingold, there are three major forms of social spaces. The first one corresponds to places in the landscape that are one-dimensional, as dots on a map. The second one is two-dimensional and linear, taking the form of a path between places. The last form of social spacing is three-dimensional because it includes tenure over the space. These are usually fixed territories mainly related to sedentary type of societies. The first two forms of social spaces are more common for mobile societies and currently very few examples of such a concept of space are left in the landscape. For such an understanding of space, returning to places and the repetition of the annual cycle are crucial. In the third form of spatial organization, the concept of boundaries and enclosing space is the most significant development.

3.1.2 Is there landscape archaeology in Bulgaria?

Landscape is not a word that has a proper equivalent in the Bulgarian language. In Bulgarian usage, there are two terms: either the German "Landschaft", which refers to the physical expression of a geographic unit, or the French "paysage", referring to the visual insight of a certain area. Hence, it is very difficult to suggest the use of the LA concept in Bulgarian archaeological theory and practice. Several additional problems have prevented the development of LA in Bulgarian archaeology, three of which I am going to discuss briefly here. The first one is the common interpretative framework in Bulgaria, which follows one and the same pattern of precise description of the sites, features, artefacts, etc. and their location with respect to the surrounding geographical or archaeological features, followed by interpretation in terms of chronology, function, parallels and cultural affiliations. The lack of a tradition of employing or developing theoretical models which aid understanding of archaeological evidence leads to the presence of scattered hypotheses that stand on their own and do not form a coherent framework for interpretation. In terms of LA, this means that if, for example, a visual connection between certain monuments was observed, the interpretation stops there with registering the fact of visibility. The second problem is, without a word for a landscape, it is very difficult to divide landscape from environment and very often (if not always) what a Western landscape archaeologist would accept as a structuring element in a social landscape (e.g. an outcrop) is treated by Bulgarian archaeologist as an environmental/natural feature towards which the site might have been oriented. In the last few years, some concept of cultural milieu is breaking through in Bulgarian archaeology that seeks a connection between archaeological sites within a given area, leaving, however, the landscape as a passive recipient. The third general problem in embracing the LA concept is the heavily employed idea of continuity in Bulgarian archaeology. Continuity is when a Roman barrow appears on the top of a tell; continuity is when mixed materials from late prehistory to Medieval times are found in a rock cut sanctuary; continuity is what Western archaeologists would call cultural memory, continuity is everything which has more than one archaeologically documented period. Although never defined or explained, the continuity concept is broadly reproduced in Bulgarian archaeology, within which the interpretation of certain facts simultaneously starts and ends. This practice prevents the introduction of alternative, and more flexible, approaches for the explanation of the diversity of sites and inter-site relations.

Given these serious limitations, Bulgarian archaeologists have provided some evidence for the existence of a structured landscape but without such a terminology. In the following section, I have summarized this evidence, which, once again, is not inherent to any particular interpretive mode except culture history.

The first and to a great extent the only, monuments that were considered as oriented to the landscape are the megaliths. They are standing stones, dolmens, rock-cut tomb and sanctuaries, rock niches, etc. mainly spread in the mountainous regions of Southeast Bulgaria and traditionally connected with Iron Age human activity in the region. Some Medieval traces have also been reported, thus leaving pre-Iron Age and Roman times empty of such kind of activities. This chronological sequence is disputable on two points. First, while I should agree with the relative chronology of the monuments containing dateable materials, the subsequent transfer of the same chronology upon empty or looted monuments is dubious. Second, if Iron Age dating is accepted as the beginning of megalithic activity that was not renewed before Middle Ages, it contains the implicit notion of lack of perception of the megaliths during the Roman period. I make these comments on megalithic chronology not because it has any particular relation to my study area and period but as an example of how a Bulgarian interpretative framework functions in relating a group of monuments and hence producing, if not false, then fairly dubious general interpretations.

Groups of standing stones are distributed around the Old Bulgarian capitals in North Bulgaria and are consequently related to the proto-Bulgarian tradition of erecting stones in memorial services, most probably in honour of dead warriors (Rashev 1992, plus the full reference there).

The general interpretation of megaliths as an expression of "sacred" activity connected another group of sites to the circle of landscape-oriented monuments. These are multi- or single layer sanctuaries located on a peak or other prominent natural feature.

Since the Skorpil brothers - the first investigators of Balkan megaliths - up to now, megaliths and peak sanctuaries have attracted archaeologists' attention as non–utilitarian and hence ritual monuments. The main research emphasis was on their distribution, chronology and function and no attention was paid to their spatial relations within the landscape. Apart from the fairly rare observation of a visual connection between some sites or between a site and a natural feature (Domaradski et al.1999, Nekhrizov 1999, Borislavov pers.comm.), there was no attempt to interrelate the sites or a site with its surroundings beyond the level of description and material culture parallels. The landscape was never incorporated as a structuring element in the sites' interpretation or at least not in the terms of the contemporary Western concept of LA.

3.1.3 LA and GIS

At the dawn of GIS applications in archaeology, there was no clearly stated difference between landscape and environment in terms of the aims of investigation. Although theoretical, methodological and practical aspects of landscape, society and space in GIS were broadly discussed in almost all chapters of "Interpreting Space" (Allen at al. 1990), there was no trend either to divide landscape from environment or to explain what their relation in terms of the GIS analysis might be. It was claimed that "the combination of LA and GIS is one of the most profound and stimulating combinations in archaeological theory and method in the 20th century" (Green 1990: 5). This not very well grounded LA umbrella of early studies was easily seen as a result of a mechanical combination of the initial GIS design for the investigation of the physical background and the concept of the interpretation of space in landscape theory. However, the criticism of these early studies was towards their implicit eco-systems approach. For this reason, Wheatley attempted to bring GIS together with an LA body of theory arguing against the notion of "GIS theoretical neutrality" (Wheatley 1993). The introduction of perception and context as two important issues in people/ environment relations was a breakthrough in incorporating GIS into a broader interpretive framework (Wheatley 1993). The apparent side effect of this article, however, is the constant contradiction between what one may call "landscape" and "environmental" application of GIS.

In this study, "landscape" and "environmental" aspects are also divided in two different sections following the logic of the statement. But I have to underline that such a division in the interpretation of a certain site or a region is not meaningful. Although separated in the theoretical chapter, the "landscape" and "environment" GIS analysis in chapters 5-7 will be presented as an entity for each site case study. A similar understanding of GIS studies was summarised by Witcher, who pointed out the concept of the mental map (after Downs and Stea 1977, Gould and White 1974) as a proper theoretical base for such applications (Witcher 1999). The basic issue in these studies is the link between perception and preference in which the latter is an active response to the former. "Preferred areas" can be investigated via GIS quantitative tools in terms of the value of the variables within these areas, not the variables themselves. Together with the presumed degree of agency, the latter distance this model from the heavily criticized simple causative link of environment-human adaptation. However, the concept of the mental map has its limitations. Defined as both an abstract map of the surrounding

landscape inherently held in the human mind and its material expression as a sum of individual responses to spatially defined units, it contains the implicit notion of an universalist perspective (Witcher 1999). Having in mind the limitations of studying possible asymmetries patterned in the landscape - not just with the means of GIS but in general, as well - one may characterise the human/environment relationship on the basis of certain classes of evidence (such as environmental variables, cultural memory, social tension, etc.) and leave the door open for any new data and interpretations.

Unlike other mapping tools, such as CAD, for example, GIS have the ability to "place" us within the landscape (Witcher 1999). Perception is a key issue in exploring the social landscape, the landscape of power and the cultural landscape, terms used in GIS literature to distinguish GIS from its "implicit" environmental orientation. Another important category in these structured landscapes is the spatial patterning that has taken place in the successive organization of the landscape. Perception in terms of visibility and movement across the landscape, as measured by cost-surfaces, are routine operations in each GIS package. The limits of exploring perception with GIS are more or less the same as those which every landscape archaeologist encounters while studying perception. Following Rodaway's definition of perception as both reception of information and mental insight (Rodaway 1994:10), Witcher (1999) has pointed out the capacity of GIS to cope with the perception of information but with its lack of success so far in studying mental insights.

Since Wheatley's pioneering article, the number of case studies that have applied the "landscape" approach to GIS has gradually increased. Three of them that, according to my opinion represent the best trends in "landscape"-oriented approach, will be summarised here. They are selected, also, as an example of how differently formulated research aims, including the social (Llobera 1996), the cultural (Boaz and Uleberg 1995) and the spatial (Wheatley 1995), are all dealing with the active perception of the landscape that simultaneously constitutes and is constituted by the socially structured landscape.

Social theory was incorporated in GIS practice by Llobera, who had employed concepts such as Giddens' structures and Gibson's affordances in his study of Wessex Linear Ditches in the Salisbury Plain (Llobera 1996). Affordances are understood in this particular case as an individual perception of properties of a real environment through action; they are investigated by GIS' ability to calculate and correlate measurable variables (angles, distances, etc) in order to explore the distribution of certain landscape characteristics, while "moving" within the landscape. The affordances linked to structures via Bourdieu's concept of practice are expected to "explore how mechanisms of social reproduction and transformation play a role in an individual's environment" (Llobera 1996:614). However, these mechanisms were not very explicit in the otherwise coherent human/landscape relation study. GIS analyses were used to show that Wessex linear ditches were constructed in respect to natural topography (aspect, hillcrests) and being "informative markers", segmenting rather then enclosing the space, thus providing freedom of moving within the landscape and avoiding the insider/outsider opposition (Llobera 1996).

Another trend in landscape-oriented GIS analysis puts the emphasis on the concept of cultural landscape (Boaz and Uleberg 1995). In their investigation of the Iron Age site distributions in eastern Norway, Boaz and Uleberg introduced Keller's definition of landscape rooms as a method of studying changes in the cultural landscape. Being topographically consistent bounded parts of a landscape, landscape rooms are constituted of a set of environmental variables and a number of structures integrated by some socio-historic and economic factors. A key point in the concept of landscape rooms is that the structures are planned and interrelated by their creators according to specific meaning and /or value - in other words, they carry a cultural burden. Changes in cultural landscape are believed to represent changes in the understanding of these structures (Boaz and Uleberg 1995: 253). In the case study of eastern Norway, GIS were used to design two different chronological phases of landscape rooms around burial mounds in one and the same hypothetical landscape. Differences in visibility from a barrow and towards the same barrow are believed to be crucial in the comparison of the different landscape rooms that, together with differences in environmental variables of these rooms – another routine GIS property, might give relevant information about the specific value of these bounded areas for their inhabitants. Boaz and Uleberg were aware of the difficulties of connecting landscape rooms with settlement units and suggested their interpretation either as settlements or ritual areas on the basis of previous investigations supporting each one of the hypotheses (Boaz and Uleberg 1995).

The problem with this kind of approach is that, without a test against "real" archaeological evidence, the concept of landscape rooms remains highly speculative and not very well grounded in anyway fragile theoretical and methodological LA/GIS relations.

The last example of this selective overview of GIS "landscape" approaches presents the commonest application of GIS case studies – without any strong engagement with any particular theoretical concept. Cumulative viewshed analysis was applied to study the

distribution of long barrows in the regions of Avebury and Salisbury Plain (Wheatley 1995). A series of routine GIS analyses and some statistical tests were used to establish the number and locations of barrows with the highest number of line of sights – i.e. the best visibility. The results showed different pattern in the two regions. In Avebury, visibility seemed not to be very important in barrow location. In contrast, Stonehenge long barrows show a continuous trend of location in areas that have visual contact with other barrows. Thus GIS analysis confirmed the earlier hypothesis for the Dorset Cursus made by Barrett et al. (1991) for the particular role of already existing monuments in the planning and design of the spatial patterning of the landscape. Earlier barrows were not just incorporated in the new structure but visual and physical reference to them was used to approve and acquire their power and authority. This is a practice, as argued above, of negotiating and reproducing social power and control. That this practice was not common or most probably was one of many is clear from the Avebury example. A number of factors was assumed to cause the differences in the two regions – accessibility to resources, landscape versus monument emphasis, two opposing groups of people, expressing, respectively, different practices, etc. (Wheatley 1995).
The Avebury and Salisbury Plain long barrows case study suggests that, even without any specific theoretical concept, GIS analysis could be valuable, since it reveals and studies the social mechanisms inscribed into the landscape.

One final point should not be omitted in this brief section on GIS and LA. As yet, there is no consensus about the ability of GIS to study the landscape of power. The cognitivist-deductive approach introduced by E. Zubrow (1994) was opposed by Witcher (1999) on three points – "assigning spatial extent to the abstract notion of power", "equating power with distance" and the lack of perspective – who is perceiving and who is accomplishing this power.

Viewshed and cost surface analysis are considered by most GIS practitioners as the most powerful GIS tool for the investigation of the cultural landscape (van Leusen 1999, Wheatley 1995, Witcher 1999). However, cost surface analysis has been criticised by GIS (Boaz and Uleberg 1995) and non- GIS practitioners (Bruck and Goodman 1999) as irrelevant to cultural landscape studies. The cost surface analysis is discussed later in this chapter (see below p. 37) but it should be mentioned here that excluding the cost surface analysis from landscape archaeology investigation "tool-kit" is as much deterministic as considering it as a primary or the only tool.

Visibility or viewshed analysis is not directly attacked but rather discussed in terms of the presence of possible obscuring factors not easily traceable with GIS toolbox (Wheatley 1995). The main candidates are possible vegetation cover and obscuring weather conditions. My own field practice (doubtless not unique in Europe) has shown that vegetation is an unstable and changeable factor that can either aid or restrict site visibility. One may encounter great difficulties in finding even a site of known location due to rapid and dense vegetation growth. However, if desirable, visibility is relatively easy to achieve and maintain. Generally speaking, in temperate and sub-Mediterranean Europe, despite differences in local weather conditions, there are bright days with high visibility, especially during late autumn and winter, when most trees are leafless and the vegetation is sparse. So if visibility/invisibility was an aim, these times of the year were giving an overall picture of the particular landscape and hence the opportunity to choose a visible/invisible place for social practices. Whatever the practice, it had been located in an initially visible area or the vegetation was deliberately removed to achieve the visibility. Respectively, invisible locations are easy to spot and use for certain purposes. If desired, both visibility and invisibility can be maintained through deforestation or planting. Whether a site is visible or not now says little about its visibility in the past. GIS has the advantage of treating the surface as a bare field (some consider this as disadvantage, since it does not reflect a real situation) and thus, to overcome the present shortcoming in visibility analyses by giving the possibility of exploring whether the site was visible or not from a certain point (variable) in the first place. Viewshed analysis provides information on visibility from variable points, which means that visibility might have been the reason, not necessarily that it was the reason, to locate the site on that particular place. Visibility is subjective but this does not mean that it did not affect the organization of landscape. As argued above, this visibility could be "achieved" if this was important.

A significant confirmation for the analytical potential of viewshed analysis as a major exploratory mode in landscape archaeology is the recent publication of Stonehenge (Exon et al. 2000). This most discussed monument in British archaeology has stimulated many and varied approaches. But in this last GIS application, the viewsheds defined a much wider study area, never grasped before in the context of Stonehenge landscapes, to search for possible relations between sites and locales in the landscape. Some 10, 000 viewsheds were performed for the extended study area, convincingly arguing the changing patterns of spatial relations in the landscape. The major contribution of the "journeys through the real- and-imagined worlds" (as the authors called them) is that they proved that visibility had a significant impact on the redefinition of the landscape (one of the numerous examples is the difference between the Stonehenge viewshed with and without the Palisade (Exon et al. 2000:65)). A rare and very important complement to the

GIS analyses is the reconstruction of the past vegetation (Allen 1997) that provides the opportunity to justify the results of the viewsheds. An additional crucial advantage of the recent study is its excellent presentation combining text, sound and movement in a widely accessible format. The promotion of GIS results as a multimedia product of text, computer viewsheds, 3D animation and video is a serious achievement of the project, that breaks out of the above-mentioned closed circle of GIS practitioners. It would have helped the final conclusions if the narratives, presently organized according to the current British chronological scheme, were integrated into a more general narrative of the landscapes in flux. The main conclusion of this last interpretation of Stonehenge is that probably the monument was a structuring element to be looked at from outside, rather than from inside.

3.1.4 Summary

In this section, I have sought to demonstrate that there have been both terminological and theoretical reasons why landscape studies have not only failed to become integrated into mainstream prehistoric studies in Bulgaria but have not even been utilised in any of the major research projects of the last decade. Because of the amorphous, not to say ambiguous, nature of the term "landscape" (see Chapman 1997), it has been easy to reject the whole suite of concepts which could operate under the umbrella of the term "landscape". One way of mitigating the effects of this criticism, which is to some extent true, is the pragmatic selection of specific aspects of landscape approaches to examples of concrete data. This is the approach which I have sought to follow in the study of microregional route networks, viewsheds, site territories and visibilities from routes – all set against the backdrop of an active and dynamic landscape, peopled by communities whose values and cultural memories are cumulatively inscribed over the course of 4,000 years onto that landscape.

3.2 Society and Material culture

To raise the question about the link between material culture and society is to ask a basic question in archaeology – how to explain the one through the other. Archaeology has started as a study of material culture, developing into a study of past societies. Material culture and society have been related in archaeological interpretations in various ways, the most overwhelming of which was their deterministic link. As mentioned in the introduction to this chapter, a review of the various applications and interrelated interpretations of Material Culture and Society is not going to be presented here. The aim of section 3.2. is to point out those aspects of society and material culture which are going to be examined and discussed later in the case study chapters of the thesis. Some of the "social" issues were discussed in the previous part of this chapter. Others will be considered in the section 3.3. The structure of the following statement is based upon the belief that any discussion of archaeological issues always concerns society, with no ubiquitous necessity to call them "social".

3.2.1 Social Archaeology

From V.G. Childe's formulation of archaeological cultures to modern Agency theory, numerous theoretical concepts and sensational discoveries have marked the efforts of theorists and practitioners to envisage and cognise the human past. The aim of this short section is to generalise some of the important issues and trends in recent social archaeology in order to outline the insights and notions informing the interpretative framework of the current study. Although the term Social Archaeology is sensible as it contains the implicit notion of non-social archaeology, I accept this formulation as long as the concept of Social Archaeology accommodates the co-existence of household archaeology (Tringham, Bailey)[1], gender archaeology (Hasdorf, Spector), settlement archaeology (Chapman), mortuary archaeology (Binford, O'Shea), etc. All of these archaeologies, defined as such over the last 50 years, are studying different aspects of society, and, apparently, social archaeology is the only broad interpretive framework to grasp and to unify the different explanatory modes and methods applied in these archaeologies. However, such potential cross-referenced interpretation of different set of archaeological evidence is neither well theorised nor broadly practiced. Until recently, archaeologists tend to explain social change either in terms of evolution (Friedman & Rowlands 1975), increasing complexity (Renfrew & Cooke 1979), or developing hierarchy (Bintliff 1984), or relying on mortuary evidence as primary source for social organisation (O'Shea 1984), etc. This is maybe due to the shortage of relevant evidence (e.g. abundance of settlement data, not supported by mortuary evidence or vice versa) from one side; and from the other side, the dominance of certain theoretical trends can restrict research into social aspects to "understanding" (e.g., household development or contextual interpretation).

At present, social archaeology covers a very broad range of research issues, such as gender, status, rank, identity, social order, etc. and most of all - social transformation and change. It also has been in constant relation to other social and "non-social" sciences such as anthropology, human geography and economy that influenced the development of the discipline in various dimensions.

[1] The names in the brackets present just two of numerous followers of each different *archaeology*. They are chosen on the basis of archaeologists' long-term research interest in the given area and that's why years of publications are not mentioned.

Sociology had a relatively late impact on archaeological theory with the introduction of the concepts of the French sociologist Bourdieu (1977) that inspired the development of related general social theories (Giddens 1987, Gosden 1994). In this research, the studies of some other sociologists (Barnes, 1954, 1969, Noble 1973, Mann 1986), adopted by some archaeologists (Clarke 1979, Chapman & Dolukhanov 1993, Chapman 2000) provide basic theoretical background.

The presently favoured interpretative paradigm in archaeology based on agency theory seems to reconcile the variety of approaches to different archaeological data and to make any interpretation possible as long as the agent is identified. Agency in archaeology is seen as "the intentional choices made by men and women as they take action to realize their goals"(Brumfiel 2000: 249). This gives a broad theoretical background for the investigation of these choices in action, named as strategies, practices, rituals, patterns, etc., in order to reconstruct and explain the multi-facetted and dynamic human past.

3.2.2 Social Archaeology in Bulgaria

The general trends in Bulgarian "social" archaeology have been outlined in Chapter II (see p. 9 - 14). In summary, Bulgarian archaeologists' concept of society is the ubiquitous substitution of culture for society. This more or less equates to Childe's concept of the representation and interpretation of complex archaeological data, with a few Marxist elements added if the need arises for social explanation. If mentioned at all, social transformation is seen and interpreted in terms of cultural transformation (Raduncheva 1976, Todorova 1978, Georgiev et al.1979).

The mortuary domain is considered as a primary source of social information and any Bulgarian archaeological discussion of social issues has mainly been linked to burial data. The latter is accepted as a reflection of status and wealth and as evidence for social and property inequality (Raduncheva 1976, Todorova 1978, Katincharov 1975, Ivanov). The mortuary arena was the only context in which some gender issues were tackled (Todorova 1978).

Much less attention was paid to settlement data as a source of social reconstruction because of the lack of readily visible and explicable differences within the complex domestic domain. The reflectionist assumption was valid for settlement data as well - e.g. pits with "discard" filling were rubbish dumps and houses with many pots or household goods were "rich" houses (Todorova 1978, Raduncheva 1976).

The following two sections summarise some interpretations of Bulgarian archaeological evidence that are not burdened by the limits of the cultural historical approach and incorporate the data within an interpretative framework for which social processes constitute a key point.

The mortuary domain

It is not surprising that the monument which has attracted most attention for both Bulgarian and Western archaeologists is the Varna cemetery. The breadth of different opinions and commentaries on Varna was summarized by Chapman (1991) as processualist (e.g. Renfrew), materialist (e.g. Ivanov) and symbolic (e.g. Gimbutas). Despite the different approaches, however, all of the researchers share two similar insights:- a) Varna shows deep social differentiation and b) such a process cannot be claimed for the preceding Early-Middle Copper Age. It was believed that the apparent paradox of developing copper metallurgy in a non-ranked society was solved by the Varna "community" whose abundance of metalwork (copper and gold) in a non-utilitarian context was said to demonstrate the social origin of metallurgy (Renfrew 1978). In a later study of the emergence of wealth in Europe, Renfrew (1986) developed his interpretation of Varna, claiming that it constitutes evidence for the emergence of ranking in which the ownership and display of valuable objects underpins the social order. Social ranking is always connected to a developed system of production and exchange and circulation of goods of prime value. The combination of these three variables was to characterise the Bulgarian Copper Age, hence its presence reflected in the Varna cemetery (Renfrew 1986).

One of the more recent discussions of the Varna phenomenon attempts to resolve the major and, despite numerous researches, unanswered question why such prominent social differentiation was to be expressed in Varna in particular (Chapman 1991). Like most of the previous commentators, Chapman does not consider the Varna case in isolation from overall Chalcolithic developments in Bulgaria. But, unlike them, he seeks for concrete evidence for social tensions and differentiation, rather then to generalize random evidence from the whole Bulgarian territory (Lichardus) or theorise the overall social process (Renfrew). A key point in his analysis of the available settlement and burial data from the Neolithic up to the end of the Copper Age is the concepts of social space and arenas of social power (ASPs) – places where the negotiation of quotidian social relations took on concrete form.

In his study of the three Copper Age cemeteries of Devnya, Goliamo Delchevo and Vinitsa, Chapman (1996) found that each community was using the same material culture to

make different statements about age/sex identities and that, moreover, the different genders attributed values to different grave goods – copper objects for males, functional tools for females. Both tells and cemeteries are dialectically linked in the gradual process of social differentiation throughout the course of the climax Copper Age, as the creation of distinct cemeteries is supposed to indicate the spatial focus for re-negotiation of an otherwise insoluble social contradiction or tension on tells. The apogee of this social differentiation is expressed in the Varna cemetery. Here, the total absence of females from the rich core of the cemetery indicates that, whatever the actual balance of social power between males and females, males had managed to dominate the mortuary aspect of the public domain – that part which may have been responsible for the reproduction of lineages and wider political relationships. This interpretation is favoured by archaeologists such as Lichardus (1988) and Ivanov (1988) who emphasise the archaeological evidence for male warrior identities (cf. Chapman 1999a). However, the insight of social anthropologists such as Strathern (1988) that male domination of the public arena does not necessarily mean the obliteration of female power and influence in many salient parts of social life should make us cautious in our interpretation of the Varna phenomenon as a male-centered society.

The domestic domain

The development of household studies in archaeology reinforced the importance of the house itself as crucial evidence in the overall socio-cultural process of change and stability. This new understanding of the house was applied to the data from Ovcharovo in a study of spatial pattering on the tell, in particular where superposition houses are found throughout the whole occupational sequence (Bailey 1990). Bailey argued that the layouts of the houses together with increasing number of tectomorphs (house models) were deliberately chosen strategies of legitimating each new occupation (horizon) after some period of abandonment. Houses with their own "life" or biography have participated in maintaining social continuity and hence stability on the tell (e.g., House 59 on Tell Ovcharovo: Bailey 1996). These practices of legitimisation handled the rivalry and tensions between tell's inhabitants and the loss of their effectiveness led to the site abandonment (Bailey 1990). Bailey's approach does not rejects Todorova's conclusions and advocates a different perspective on the data, which in this particular case has hypothesized mechanisms of successful social reproduction.

Tell Ovcharovo has been discussed by Chapman (1990), as well, in his study of social inequality on Bulgarian tells, together with three more fully excavated tells (Targovishte, Radingrad, Poljanica), in an analysis of the development of social space throughout the lifetime of the tells. By the investigation of a number of spatial variables (house dimensions, built/un-built ratio, access maps and inter-house space), Chapman has argued that there were two contrasting patterns of spatial order on the investigated tells. The first one (Targovishte and Radingrad) indicates a more coherent, repetitive tell organization in which the houses presented stable dimensions, one/two entrances and access levels and within which it was easy to move due to the gradually increasing un-built space and the variety of inter-house spacing. In the second pattern (Ovcharovo and Poljanica), there was constrained access around the tell, cyclic variations in house dimension, containing up to 11 rooms with multiple entrances and access levels, the un-built ratio was diminishing through time, while the inter-house space remained stable and not very large. Both patterns are claimed to manifest different spatial expressions of household and lineage competition, in which the second pattern (Ovcharovo and Poljanica) reveals evidence for successful reproduction of social inequality. Failure to find an adequate way to express the social rivalry on Targovishte and Radingrad settlements led to the relatively short lifetime of these two tells.

Both Bailey and Chapman have examined one possible aspect of prehistoric social organisation – how house design and spatial ordering was used to negotiate and maintain the existing or new social order on the constrained area of a tell.

Chapman goes further in his study of the Balkan Chalcolithic through the investigation of certain aspects of material culture and their incorporation in a wider social interpretive framework. In a series of studies, Chapman has identified and introduced a number of practices such as fragmentation, accumulation, enchainment, the deliberate burning of houses and structured deposition. Personal enchainment through gift exchange and genealogy was argued to be valid also for the exchange of fragmentary objects, as well as for the exchange with the ancestors by means of structured deposition. The accumulation of objects appeared as an alternative practice along with the intensification of exchange and ritual networks and the deepening of occupational specialization. Structured deposition (see section 3.2.3) and house burning were related practices of exchange with the ancestors. Summarizing previous studies that have sought to identify a set of criteria for deliberate rather than accidental fire (Tringham and Krstić 1990, Russell 1994, Stevanović 1997), Chapman (1999) has extended the range of evidence over the Balkans (including Bulgarian data) and suggested that house burning was closely related to structured deposition, forming a specific type of "set" – the 'house assemblage' - comparable with grave sets and hoards. The main product of house burning is burnt daub that was easy

to distribute in different contexts and thus to objectify the link between the "dead" ancestor's house and the living. Chapman (1999) has suggested that house burning was related to the death of an important member of the community, while I should extend the range of possible events in which deliberate burning have taken place (see p. 80, 163).

Fragmentation and structured deposition on a tell are important practices of the "grounding" of the inhabitants in the ancestral world. A fragment evoking an image for the complete object, as well as the time/space characteristics of its origin, have been interpreted as a significant point for people interrelating through fragment enchainment. Complete objects were, of course, not devoid of meaning; their deposition was meant to underline principles of social integration. The increase of complete objects within a tell, and especially within the newly defined formal mortuary area, betokens a change in social relationships and the emergence of a new social practice of object accumulation. In the latter, the value of an object in terms of the circulation of relationships has been transformed, by keeping the object, into a means of negotiating social relations. The new material - metal and gold – was not only harder to fragment but also was readily accumulated in sets. During the course of gradual social differentiation, based on more or less successful household or lineage development, object accumulation gained an advantage over personal enchainment as two ways of acquiring social power. One way to express status was to accumulate and display object/s in the emergent arenas of social power. Both settlements and cemeteries have been argued to represent such arenas of social power, in which cemeteries were the initial area for the display of social differentiation. The latter was claimed to be rooted in the adoption of the emergent but weakly developed practice of accumulation, in which the inalienable link between people and objects has changed into the personal possession of objects; as well as in gender contradictions caused by the introduction of secondary animal products that has led to a division of labour in which males had gained political power through ploughing, while females maintained their traditional economical power gained through dairying and weaving (Chapman 1991).

Chapman's approach to Bulgarian later prehistory data engages a wide range of evidence that elsewhere is either misinterpreted or avoided (e.g. pits on tells, numerous vessels with missing parts, burnt houses, etc.) in a model of development of social relations highlighting both tradition and change. The problem with the spatial analysis of the tells is their small sample number – four out of 550 (the exact number of the tells occupied during the Chalcolithic period is not known)- that is, however, entirely due to the availability of excavated and published data.

A similar general intention to inter-relate people, places and things permeates Bailey's recent monograph entitled "Balkan Prehistory", in which he employs a wide range of data, deriving from a series of excavated sites in Eastern Hungary, former Yugoslavia, Southern Romania, Bulgaria, Northern Greece and North West Anatolia (Bailey 2000). The chronological span is from the Mesolithic up to the end of the Early Bronze Age. The material culture data set consists of lithics, pottery (vessels, figurine, altars, etc.) and metal assemblages, as well as ornaments and raw materials. Special attention was paid to the built environment (architecture and internal spatial organisation) and burial practices.

In Bailey's view, the main social processes during the later prehistory of the Balkans are seen as exclusion, incorporation and projection. Exclusion and incorporation are the logical opposites of one and the same process of control over the ways in which material culture and people are related. Dividing them into two processes is probably meant to emphasise the very act of exclusion (e.g. separating rooms for different activities) and incorporation (e.g. the dead were buried under the house floors). Projection is the more abstract and less evident part of the same process of conceptualising space, material culture and people. Although not stated clearly, these symbolic and/or physical actions were made as a result of deliberate choice. However, it remains unclear why such choices were made, why and how exactly these social processes were developed and whether or not - and indeed why - they were unique, contrasting or similar to contemporary social processes in a wider context.

For the purposes of the present study, most of Bailey's research into Balkan prehistory is not integrated into the research scheme, since many of the basic arguments are generated from evidence for architecture, settlement planning and the use and discard of figurines, which are not strongly represented (if at all) in the current study area. However, some of Bailey's previous hypotheses (e.g., the pattern of deliberate superimposition of houses on tells) are acknowledged where they are considered as relevant.

Social interpretations in the present study

The gap between Bulgarian and Western interpretative concepts is far from being bridged. The political changes of the late 1980s broke down the formal ideological framework but so far alternatives to the traditional modes of archaeological explanation have not been elaborated. Building up a tradition of discussing social aspects in accordance with some body of theory is a long process, during whose initial stages tolerance of other people's opinion is a key point. Yet, this is far from happening. At present, there is a conceptual vacuum in Bulgarian

archaeology as a whole and in particular within social archaeology. The old interpretations have not been reconsidered, new ones have not been established and studies such as those of Bailey and Chapman have, in fact, not been in active circulation among Bulgarian archaeologists.

In the current study, it is my intention to introduce some of the modern concepts in social archaeology with regard to both the available data set and the research priorities formulated as landscape-material culture-society. The Drama case study will be discussed in some details in section 3.3.1. Here, I shall present in brief the interpretations of selected aspects of the settlement and burial data from the Maritsa Iztok area. Through this debate, I am hoping to build up an alternative more socially- orientated interpretative view of the same data.

Although not all of the sites in the Maritsa Iztok study area are fully excavated, their existence as the consequence of the long-term human interest of the region provides a significant background for the interpretation of daily and lifetime socio-economic practices. As already mentioned in Chapter I, prehistoric burial evidence in Maritsa Iztok includes numerous BA barrows (the exact number is not known) and two flat LBA cemeteries. The former are believed to belong to the Lower Danube variant of Pit-Grave culture (Panayotov and Alexandrov 1995). The appearance of both cremation and flat cemeteries during the LBA has not received any formal explanation yet.

Some aspects of deliberate human behaviour were considered in the discussion of the burial rites of the biggest barrow in the Maritsa Iztok region. This very precise study of the typology, technology, chronology, parallels and position of the grave goods in the graves from the Goliamata Mogila (the Big Barrow) seeks a reconstruction of the ritual (burial - note mine) practices in the EBA in the region. It was inferred that the vessels were made especially for the burial and revealed a high level of pottery-making skills. Therefore they could not be accepted as exchange objects between the local agriculturists and the nomadic Pit-Grave communities. Most of the vessels were deposited whole in the graves and four patterns of their spatial order were identified. The comparison with a neighbouring barrow revealed difference in the deposition practice outside the grave pit that led the author to suggest "people that have different understandings of death" (Leshtakov and Popova 1995:77). The difference was lack of trizna in the Goliamata Mogila (the Big Barrow) in contrast to its widespread use in barrow IV (2.5 km to the South East). "Trizna" is a Slavic word for a memorial practice of the deliberate breakage and perforation of pottery that is subsequently scattered. Despite the fact that trizna-s are fairly common on Bulgarian sites, there is no formal introduction or explanation of this kind of practice, which is generally referred to as "ritual" or an indication of feasting. The presence of Pit Grave characteristics in the Goliamata Mogila (e.g. stone stelae) were not denied and, on the basis of the results of anthropological investigations, it was claimed that "if the dead were "aliens" in the region of Ezero culture, they had been close enough to the local population" (Leshtakov and Popova 1995: 78). The hesitation in challenging the Pit-Crave concept and the formal refusal to employ or create an alternative generalized model left this otherwise excellent study lacking in both overall mortuary domain theory and the regional specifics and importance of burial data in the Maritsa Iztok area.

All of the prehistoric sites in Maritsa Iztok area that are not barrows are interpreted as settlements. In the past, settlement remains have been interpreted using two basic principles, First, the settlement pattern consisted of a central settlement – a tell - with some affiliated smaller sites - satellite open-air settlements (Leshtakov et al. 2001). Site distributions and their possible interrelations within and outside the study area were investigated in spatial, chronological and logistical terms. The second principle is that the similarity or identity of pottery or other archaeological material was produced as evidence for chronological or cultural affiliations, as well as for contacts with contemporary archaeological cultures (Leshtakov et al. 2001).

Before turning to alternative concepts, two major disagreements with the above interpretation should be presented. First, the lack of formal criteria in Bulgarian archaeology for the interpretation of archaeological evidence as dwelling activities (whether permanent or not) results in claiming a wide variety of archaeological evidence as discard indicative of settlement. This is valid for the Maritsa Iztok area in particular, where all of the satellite sites are claimed on the basis of building horizons (presumably dwelling floors) or pottery scatters. Although I was not able to find any records or material from some of the so-called satellite sites (e.g., the Chalcolithic "settlement" near tell Galabovo), having known the constrained working regime of the Maritsa Iztok team and having had numerous discussion with my colleagues, I do not doubt that traces of human activity were really present within the vicinity of the tell and whose traces were called "open-air annexes". My criticism here targets the omission of the possibility of any kind of off-tell activities. Off-site archaeology has no local tradition in Bulgarian archaeology (the only exception is Bailey et. al 1998); its omission from consideration can lead to the establishment and re-production of, if not false, then highly speculative, settlement patterns.

The second objection concerns the deterministic view that any "domestic" discards reflect past settlement activity. Thus, the presence of hearths, ovens with thin bases and beaten clay floors within an enclosure which reaches 2 m in depth has misled the investigators into the inference that this triple ditch/stone enclosure is a fortified settlement with dug-out dwellings (the interpretation of this site - Ovcharitsa II - is discussed in section 6.3.3). At least one more site – Iskritsa – contains features, such as several pits and a single burnt feature (house), which provide grounds for challenging the prevalent settlement interpretation.

However, these two objections do not question the spatial order of the sites; since the suggested settlement pattern (Leshtakov at al. 2001) does not lead to some explicit social interpretation, this time/space model of prehistoric development in Maritsa Iztok can be used as a starting point in a more socially- oriented approach to the data, for which the diversification of site function is crucial for its interpretation.

A key point in the alternative approach is the concept of arenas of social power (ASP)(Chapman 1993). According to this concept, archaeological sites are places for; inter alia, the negotiation of social relations and not just a static display of material evidence. The type of investigation in the Maritsa Iztok area does not allow such meticulous analysis as for tell Ovcharovo and the Varna cemetery, for example, but yet there is enough evidence to enable the identification of a wide variety of social practices at the sites in the study area. The introduction of the ASP concept will enable an innovative approach to problematic issues in both domestic and mortuary domains, currently insoluble within the present interpretative framework. A major characteristic of the latter is that humans are "bearers of culture"(Nikolov 1980, Todorova 1995), while, in the suggested alternative, people's action are mediated through material culture.

Before moving to the other two key novelties in the interpretation of the data - social practices and social networks – it will be useful to identify the facts and interpretations that the current approach is going to challenge.

At present, the barrows in Maritsa Iztok region are formally related to the Lower Danube variant of the Pit- Grave culture (Panayotov and Alexandrov 1995). Such an interpretation is contested insofar as the barrows contain some evidence for local agricultural elements that raise questions about their origin and meaning (Leshtakov and Popova 1995). The cultural debate obscures two other important aspects of the barrows – their physical appearance in the landscape and their possible social potential. No matter whether local or adopted or an "alien" phenomenon, the barrows constitute significant evidence for a change in the relationship between the dead and the living with regards to the previous Copper Age period, from which no burials have as yet been found[2]. If local in origin, these new monuments betoken a profound social change around the end of the LCA and the beginning of the EBA. If non-local in origin, any newcomers within the permanent tell landscape who left such a prominent cultural feature should trigger a social response from the local inhabitants. In any case, deliberate human action was involved in this crucial re-definition of the landscape.

The appearance of barrows coincides with one of the most problematic issues in Bulgarian prehistory – the transition between the Chalcolithic and the Bronze Age. This period is highly debated in Bulgarian prehistory (Georgieva 1987) and the only thing on which there is common agreement is the total cultural change that has taken place. Chalcolithic tells and other settlements were abandoned and, after a certain period of time some of them were reoccupied by communities with completely different material culture - that of the Bronze Age. However, apart from the obvious change in pottery design and technology, the other two major characteristics of the BA – apsidal houses and bronze itself – were not prominent features from the very beginning of the period (e.g., the first EBA horizon at tell Ezero (Georgiev et al. 1979)). For other aspects of material culture (e.g. stone tools), so far there is no study claiming that changes in the technology or typology of the artefacts occurred at the beginning of the Bronze Age. In summary, the claimed drastic shift in material culture can be supported only on the basis of pottery production; subsequently different features were added to the assemblage to create a newly-defined EBA culture. The same radical change in material culture is presumed for the study region as well. Indeed, EBA pottery shape, technology and decoration are totally different from those of the preceding Chalcolithic. To what extent other characteristics of the material culture at the end of the Eneolithic differ from those at the beginning of the Bronze Age is not clear, since the scattered data from Maritsa Iztok does not allow detailed comparison of the full range of artefacts. However, there are practices that remained the same even after the alleged drastic "change" of material culture. All of the Late Chalcolithic tells were reoccupied, thus implicitly pointing that the former Eneolithic forests, pastures and fields were reused for growing and herding the same species known from the Copper Age (see Chapters 5

[2] So far Copper Age cemeteries are known only from the North East part of the country, with only one exception found in Thrace. The predominantly EBA flat cemetery near the tell Bereketska (Stara Zagora region) contains four Late Eneolithic graves (Kalchev 1996).

and 6 for details). This is usually interpreted as "continuity". The mechanism of this continuity that survives the chronological and cultural gap puzzles Bulgarian prehistorians and usually makes them turn towards some external source to explain the differences and the similarities (e.g. a steppe invasion or Anatolian influences). Comparing cultures as given time/space entities inevitably leads to the realization of the impossibility of explaining change, similarity and difference. Comparing social groups, however, acting in accordance with their world-view is more likely to provide some possible explanation of change and continuity. Viewing a society instead of a culture is a novelty for Bulgarian archaeologists but it is not a new approach to Bulgarian data. As mentioned above, the Varna cemetery was not an isolated phenomenon; rather it was the consequence of attempts to overcoming social contradictions during the Copper Age (Chapman 1991). Do the barrows in Thrace present a similar focal point for trying to resolve social tensions? Is it a coincidence that the earliest BA traces in Maritsa Iztok comprise several barrows and a ditch – all of which with an emphasis on structured deposition? What was the role of "local sedentary" elements (pottery) in a "nomadic" feature (barrow)? Has a total population and cultural change really taken place? Or are we dealing with a much more complex socio-cultural change?

Answers to these and related questions are possible if burial, settlement and other highly formalized sites in Maritsa Iztok are recognised as ASPs. It is not only the barrow phenomenon and the Late Chalcolithic-Early Bronze Age transition but the overall settlement dynamic in the study region that can be viewed and I believe explained through the perspective of social action.

The second notion requiring comment and revision in the course of the study is another common interpretative term in Bulgarian archaeology - *contacts*.

It is typical to interpret all kinds of material similarity of archaeological data as cultural contacts or cultural interactions, regardless of the distance between the places of origin. In most cases, the latter are used as the basis for a circular argument – there were contacts because there are similarities; there are similarities because there were contacts. In the context of the cultural-historical approach, the acculturation process was used to encompass and explain all changes – migration, diffusion and interactions (Nikolov, V. 1980). In the only short discussion of acculturation in Bulgarian prehistory, the emphasis was on a brief introduction of acculturation, assimilation, consolidation and ethnical developments rather than on the presentation of concrete mechanisms of these complex processes of human interaction (Nikolov, V. 1980). Cultural contacts dominate the interpretation of similarities, with common features initially defined as different archaeological cultures, although trade and exchange contacts were also recognized. The exchange interpretation is entirely dominated by economic constraints; e.g., in the case of the Maritsa Iztok study region, nomadic tribes exchange animal products for goods and pottery with the sedentary communities (Panayotov 1989). Local exchange within the limits of one archaeological culture was also registered (Raduncheva 1976, Todorova 1978).

Trade contacts were more readily claimed on the basis of exotic imports (e.g. Mycenaean pottery or Spondylus ornaments (Todorova 1995). Recently, the first Bulgarian study of prehistoric trade contacts was published in which commercial relations between Upper Thrace, the Aegean and Anatolia were developed during late EBA III and the MBA (Leshtakov 1996). The main archaeological evidence in the study derives from a tell in the Maritsa Iztok area that contains a wide range of Anatolian and Aegean pottery, as well as local imitations of imported ceramic shapes. Three explanations have been suggested:– a) tell Galabovo was a "trading diaspora" (after Sherratt 1993); b) it was a fair for trading; and c) less likely- it provides evidence for the existence of transhumance. Similar "trading diasporas" or fairs were recognised by the author on Samothrace Island and in Turkish Thrace. Traders were claimed to be "sammalum" – a term that appears in the Mesopotamian tablets (after Leemans 1950) or in other words itinerant traders. The MBA merchants followed the routes of earlier traders, whose existence was argued on the basis of the EBA Trojan depas cup imports in Baadere and Constantia (respectively 70 km to the South East and 10 km to the South of tell Galbovo). Upper Thrace was claimed to export raw materials and possibly some goods/commodities in exchange for goods/commodities including organic products, such as perfumes. Two possible routes were suggested – the maritime one – Crete – Irini- Samothrace (Lemnos/Lesbos)- along Maritsa river to Constantia and Galabovo; and the terrestrial one – Central Anatolia- Sakaria valley- Bosporus – Karaevli-alti- Sakar Mountain – Baadere- Sokolitsa river valley to Galabovo/Constantia (Leshtakov 1996).

So far, for Maritsa Iztok, Leshtakov's (1996) article remains the only Bulgarian study that outlines trade routes and contacts on the basis of archaeological distribution data (cf. Todorova 1995a for Bulgaria as a whole). The establishment of such a long-distance trade network is an important step towards the reconstruction of BA relations between Europe and Asia Minor and it is a pity that the author (perhaps unwittingly) remains under the influence of the concept of cultural circles and thus, does not extend his analysis outside the Upper Thracian area. The aspect of the research requiring more supporting evidence is the type and variety of the traded products.

Leshtakov's study is the only one in which "contacts" are defined in some kind of a dynamic network. In all other studies on "contacts", an area is related to an area, an object is related to an object or an area but people seem to absent. Why and how people have brought, "bought", exchanged, gifted or kept a certain object from an exotic area remains unclear. The dynamics and diversification of human contacts throughout the changing social reality has not been discussed, leaving cultural, trade and exchange contact on one and the same operational level. My intention in this study is twofold – first, to personalise the notion of "contacts" while relating people to people, people to objects and people to places and, secondly, to tackle the recurrent and changing patterns of relations in accordance with growing social diversity.

On a local, intra-regional level, such an enquiry is possible with the adoption of the idea of social practices. As pointed out above, fragmentation, enchainment and accumulation were important social practices in the Bulgarian Copper Age, the main evidence for which comes from the Northeast part of the country (Chapman 2000). Structured deposition (see next section for details) and the deliberate burning of houses were two further social practices relatively recently recognised as deliberate acts of enchainment and identity exchange (Chapman 1999, 2000). There is evidence to suggest that fragmentation, enchainment, feasting or deposition (see next section) and burning houses were practiced in the study region as well, together with the already recognized trade and exchange activities.

On an inter-regional level, the interrelation of people, places and objects is not possible within the concept of the archaeological "culture". Although the latter is already a discarded part of the history of Western archaeological thinking, it is still in active circulation in the Balkans. Commentaries on the continuous reluctance of Balkan archaeologists to employ different interpretative modes need special attention and, although undoubtedly important, they cannot be undertaken here. Instead, arguments for the suggested social alternative named "network" are to be presented. Social network concept in archaeology is related to the pioneering work of D. Clarke (1979), who adopted the idea developed in sociological theory for flexible social relations in contrast to concept of fixed social entities (groups). The advantages of network concept are that it permits multiple non-static human interrelations, which in the archaeological terms is network of settlements, network of people within a site and off-site and most importantly dynamic operational form of network. The latter is the major achievement of the network concept as it readily explain change and continuity, which remain major stumbling blocks within the traditional culture-history model. Exchange networks, in conjunction with breeding networks, are a particularly dynamic aspect of social network theory, providing a theoretical grounding for the spread of exotic objects over a variety of social – physical distances.

3.2.3 Material Culture and Social Practices

The aim of this short section is to focuses on one aspect of material culture studies - the type of link between material culture, social practices and natural processes that results in the type of evidence studied by the archaeologists.

The beginning of the debate for the nature of the "archaeological record" goes back to the mid- 1970s, when the problem of the site formation process focused the attention of leading behavioural archaeologists (Schiffer 1976, Binford 1981). In summary, different approaches to the problem such as Schiffer's eight different patterns of deposition (1985); Patrick's theoretical reconciliation of structural and contextual interpretation, and certain practical applications (Bintliff and Snodgrass 1988, Needham and Spence 1997) crystallize around the idea that the Pompeii-like premise evidence is extremely rare and more often archaeologists investigate a sequence of different types of events and evidence. The acknowledgement of various mechanisms of site formation affected the perception and understanding of archaeological evidence and their subsequent interpretation.

In the last decade, discussions about the type of evidence that archaeologists are excavating has developed into a whole new area of studies concerned with structured deposition.

The development of the idea of Structured deposition in Western archaeological theory and practice

"Structured deposition" appeared as a term in the mid-1980s and was immediately related to a ritual practice in which some contexts were deliberately highly formalized (Richards and Thomas 1984). The debate over the sacred or quotidian character of structured deposition was developed by J.D. Hill (1995), who argued that the conceptualising of deposits might be through both daily and more formal activities. Recently, Brück (1999) reconciled the opposition between ritual and secular on the basis of evidence for formalised structures in informal contexts and vice versa. She argued that prehistoric communities developed different forms of rationality, including the rituals necessary for achieving practical goals, which were radically different from modern forms of rationality (Brück 1999). Chapman (2000, 2000a) has summarised the evidence for structured deposition from Central and Eastern Europe by disputing the concept of archaeological finds as simply "rubbish". In summary, structured deposition is a

deliberate arrangement and display of a variety of objects (e.g. pottery, bones, ashes, etc.) in a particular way, which has a specific meaning for the participants in the deposition action. Recent studies revealed that features with structured deposition might be pits, ditches, burials and even houses.

Structured deposition in Bulgaria

Structured deposition as a term does not exist in the Bulgarian archaeological lexicon, partly because it is difficult to find an appropriate analogue in the Bulgarian language, partly because of a complete lack of interest in establishing a common explanatory mode for this archaeological phenomenon. However, there are findings in Bulgaria that, in Western terms, would be instantly recognisable as "structured deposition". Some of them are published and their interpretation is a good illustration of the Bulgarian interpretive practice of borrowing an explanatory framework, then neither defending its relevance for the particular case, nor explicating the origin and logic of the applied interpretive mode (Gaydarska 1998).

There are two trends in envisaging and interpreting cases of structured deposition in Bulgaria. The first one is connected with earlier findings and complete and/or precious objects (dining sets, metal sets). Common to their interpretation is the emphasis on artefacts and a neglect of context. The stylistic traits of the objects were described, while the mode of deposition and the surrounding cultural or landscape features were paid little, if any, attention. Sets of precious objects are called "hoards". Other sets are called collective findings or storage finds or a combination of both. They are related to "horizons" or "groups" of similar phenomenon – e.g. the two LBA "hoard" horizons postulated after analogues of types of bronze artefacts. Their deposition is believed to stem from the hiding of valuable possessions in response to hostile invasion. This approach has already been criticised (Gaydarska 1998) and although this interpretation has been abandoned, alternative claims have not been considered.

A different interpretation has been given to the numerous sets of precious objects – dining sets, jewellery, horse-trappings - from the first millennium BC. A sacred act of deposition was assumed for pre-Hellenistic hoards in Bulgaria in connection with the "Hyperborean" myth, usually connected to Thracian orphic rituals (Gergova 1987). An attempt to extend this practice back into the LBA was made, leaving un-discussed all the pre-LBA and post-Hellenistic findings (Gergova 1987). This ethnically oriented and time-dependent approach was favoured because of the prevailing culture-historical framework used for interpretation.

The second trend appeared in the last decade with the rapid increase in the number of excavated ditches and pit-fields in Bulgaria. These features started to be seen as a result of deliberate practice, mainly of ritual origin. Special attention was paid to their content, as well as to their context (Georgieva 1991, 2001, Bonev and Alexandrov 1996, Tonkova and Savatinov 2001, Nikov 2001, Balabanov 1995, Lichardus et al. 2001, Leshtakov et al. 2002). Five of the 15 pit-fields formally accepted as such in Bulgaria are in the Maritsa Iztok study region, which makes structured deposition an important issue of the current study.

The function of the pits provoked informal discussion among Bulgarian archaeologists, most of whom still insisted on the "rubbish-dump" interpretation given the pits' "non-representative" infilling of sherds, ash, animal bones, etc. The official publications made by the excavators of such sites and features overcame the old traditional interpretation and accepted pits and pit-fields as evidence of some kind of ritual. Since most of the pit features excavated so far in Bulgaria are from the Early Historic and Classical periods (EIA, LIA and Roman period), their interpretation has been related to the Greek tradition of libatio (Nikov pers comm.), an attempt to make images of the Greek Gods Hecate and Hermes (Balabanov 1995), a cult to the Thracian Great Mother Goddess, i.e., a cult of fertility and domesticity (Tonkova and Savatinov 2001), fertility and protection of the home or a solar cult or thanksgiving (Georgieva 2001).

In 1991, the first general overview of pit structures was published, summarising and standardising all pit features known at that time. They were classified according to their situation (in/under mound or outside cemeteries), their content and shape and their purpose (memorial, sacrificial, feasting, etc). The earliest pits included in this study were single LBA pits from Plovdiv, Essenista, Cherkovna and Govora (Georgieva 1991).

Discussion of any late prehistoric pits found within pit-fields dominated by later features has been avoided. If mentioned at all, pits discovered on tells are interpreted either as clay-mining pits filled later with rubbish, deliberately excavated rubbish pits or as storage pits (Raduncheva 1976, Lichardus et al. 2001). In one case, a cult complex consisting of a shaft, a pit and a feature was recognized within a tell, unfortunately without any context or content description and interpretation (Stanev 1997). Structured deposition has been claimed for wall-plasters that formed ritual reliefs (tell Dolnoslav) and even the settlement mound after the end of a tell's occupation (tell Podgoritsa), leaving without any explanation, however, the 100 pits that enclose the sacred space (or temenos, as the excavator called it) on tell Dolnoslav (Raduncheva 1996).

Ditches that surround tells have been interpreted as fortifications (Todorova 1995, Stanev 1997). Combination of ditches and banks were also claimed to serve as barriers against flood-waters (Bailey 1990). In just two cases, BA ditches were considered as instances of deliberate depositional practice. The first one is the ditch on tell Merzdumekia in Drama. After 3 years of excavation and 8 years of field experiment, the investigators inferred that the MBA (EBA3 according to Bulgarian chronology) enclosure bounding some 30 pits of the same period is a ritual rather than a defensive feature. It contained stones, plasters, clay, animal bones, spindle whorls, weights, vessels - fragmented or secondarily broken - and all of the materials showed evidence of deliberate order in the sequence of deposition. Field experiment observations proved that some maintenance strategies have been performed and, once they had been stopped, natural conditions caused the filling of the feature within a decade. The presumed duration of the MBA ditch/enclosure at Drama was the lifetime of one generation. A similar ritual function was accepted for the Chalcolithic ditch, which was, however, a place of structured deposition after its primary function was complete (Lichardus et al. 2001).

A second ditched site found near the village of Cherna gora was considered as a rondel, thus implying a "non-utilitarian", ritual function for this particular feature (Leshtakov et al. 2002). Complex planning over several different chronological phases and a diversity of features and artefacts documented during the excavations made the investigators infer a long-lasting, specifically oriented strategy of construction, deposition and maintenance. The two main features were inner and outer ditches, both filled with ash, charcoal, broken vessels, animal bones, spindle whorls, weights, fragments of stone and flint tools, etc. According to the excavators, the "ditch sanctuary" existed for more then 400-500 years, starting around EBA2/3 (Leshtakov et al. 2002).

Other structures that, in the Western archaeological tradition, are usually connected with SD are wells or shafts. So far there is just one reported from Bulgaria. It is considered as a megalithic monument since it is faced with stones. The shaft is 5.5m deep and has a 7-m-long dromos with niches in it. The excavator claims that it contains materials of different date such as a prehistoric layer of stones, remains of timber and animal bones, among which a fragment of a stone axe was found. It is interpreted as a LBA cult monument – a shrine devoted to spring water. The site is believed to be strongly influenced and inspired by the Sardinian Nuragic culture, although no other links with Sardinia have been identified (Mitova-Dzonova 1984).
This brief summary of structured deposition issues in Bulgaria has revealed two important facts. First, there are features that contain structured deposition and these have recently been recognized as places with deliberate depositional practices. Secondly, the lack of any general theoretical background for interpreting pit-features and their content has led to the lack of any commonly accepted term for this deliberate practice, as well as temporal, spatial and ethnic limitations of suggested interpretations that have one thing in common- they are all ritually oriented. Moreover, this approach reifies the sacred – profane duality that I wish to overcome.

Structured deposition in the current study

The present emphasis on structured deposition was prompted by the presence of such features within the study region. Some of them (e.g. the Drama ditch and the Polski Gradets pits) were recognized as deliberate ritual practice but this was not related to the overall pattern of social and/or cosmological reproduction. Others (e.g. Ovcharitsa II and Iskritsa) were misinterpreted and need re-consideration.

3.3 Microregional studies

Deliberate, target-oriented regional surveys in archaeology were very rare until the early 1970s. These were either investigations inspired by geographical approaches (Fox 1923) or early applications of settlement patterns studies (e.g. Willey 1953). The concept for a region as a time/space coherent unit that contains evidence for long-term occupation patterns was primarily applied to the Neolithic settlement of Southern Poland (Kruk 1973, English translation 1980). Later applications extended the research scope including all the known periods and sites within the surveyed area (Chapman et al.1996). The definition of region varies in different studies (compare, for example, Stehli 1989 with Chapman et al. 1996) but, in general, geographical factors are dominant in the delineation of the research area.

The microregion as a subdivision of the study area was also introduced as a proper unit of study (Bökönyi 1992). Microregion size and location was also dependent on archaeological choice prompted by the abundance of archaeological sites, on the one hand, and more often by environmental diversity on the other. According to the hitherto existing regional and microregional case studies, the concept of such kind of investigations could be summarized as interdisciplinary studies of settlement patterns and their dynamic, inter-site and site-landscape relationships in a specific, geographically bounded area.

3.3.1 The present situation in Bulgaria

Regional surveys

Systematic regional surveys in Bulgaria have been organised under the umbrella of the project for the establishment of the Archaeological Map of Bulgaria (AMB). Archaeologists from local museums (usually at the county level) had to complete a record form with detailed information for each site in their district. On a regular basis, archaeologists from AIM, responsible for enlarging and popularising the AMB project, helped county archaeologists in intensive field-walking surveys and the re-assessment and up dating of the available archaeological data set. All of the museums held records and archives of site distributions and previous investigations in the region. One of the tasks of the AMB was to utilise the pre-exiting data set and to make a detailed record of all archaeological monuments in each territorial/administrative unit (okrug) in Bulgaria.

Prior to, and now running in parallel with, the AMB project, there was a similar initiative of the National Institute for Cultural Monuments (NIMK). This was a long-term joint project between the different counties (okrug) and the NIMK but, in fact, the job has been mainly done by county archaeologists for just 6 out of 26 regions (Dremsizova-Nelchinova and Antonova 1975, Dimitrova and Popov 1978, Dremsizova-Nelchinova and Slokoska 1978, Dremsizova-Nelchinova 1987, Mitova-Dzonova 1983, etc.). While similar in aims, the two projects differ in their visible outcome and degree of successful target completion. The AMB is a computer-based interactive database of more than 14,000 archaeological sites with the possibility of keyword searches. It also contains some limited environmental data for the sites. The NIMK project succeeded to map the archaeological sites in less then 30% of all the counties but its six printed volumes complement the AMB very well, by providing paper topographic and distribution maps, otherwise unavailable from AMB records.

Apart from these large-scale centralised projects, there were several attempts to catalogue and map prehistoric occupation sequences at the regional level. These were either the result of research enthusiasm of amateur archaeologists (e.g. Petkov 1932/34, 1934, 1939, 1960, 1961,1965) or county archaeologists (e.g. Nikolov, B. 1952) or certain time/space-oriented studies (e.g. Domaradski et al. 1999). An extreme example of constrained regional studies is the Maritsa-Iztok Expedition itself (Panayotov et al.1991, 1994, 1995, 1998, 2001). Others of similar kind are the intensive surveys of linear strips along highways, pipelines and dam constructions (Leshtakov 1997, Borislavov n.d., Borislavov et al. n.d.).

Some data about the cultural environment at the microregional level could be found in some publications of major multi-occupational sites (e.g. tell Ovcharovo) that provide, as a reference point and additional information, the site distribution around the immediate excavated area (Todorova et al. 1983). Recently the "cultural milieu" became an integral part of the survey record form of the Maritsa Iztok Expedition.

All of the above mentioned studies contain empirical data for the sites in terms of variables such as area, chronology, features, etc.; a few of them are complemented by interdisciplinary investigations such as palaeo–ethnobotanical, palynological and faunal analyses, as well as mineralogical, chemical and geomorphological studies. Most of them also present some kind of interpretation and/or discussion.

However, regional surveys were rarely considered as an opportunity for settlement pattern studies (one exception is Leshtakov et. al. 2001). Despite the use of a constrained area, local studies failed to identify places or a series of places as an entity (e.g. river valley/ microregion, catchment basin/macroregion) that might be compared and /or contrasted to adjacent regions.

Funding constraints, and hence research priorities, put Bulgarian archaeologists in the position of describing cross-cultural and cross-temporal relations within and outside a surveyed area (county, river course valley or pipeline layouts), rather than exploring the evidence from different points of view and thus giving them the opportunity to justify what is unique (what is specific to the region) and what is general (what unites the region with the outside world). Microregional and regional studies were never mentioned in the Bulgarian archaeological research agenda and usually the contemporary administrative division imposed the smallest territorial research unit. Though maybe occurring to some Bulgarian archaeologist, the concept of microregional studies as an opportunity to explore inter-site relationships, settlement patterns and regional social and economic potential, has never been realized as a working project.

The Drama project

So far, there is only one case in Bulgaria in which microregional aspects of the study were claimed and partly implemented as such. For 18 seasons since 1983, a German expedition has undertaken a series of field surveys, total excavation of three sites, palaeo-geographical investigations, detailed analysis of artefacts (flint, pottery), animal bones and plant remains studies in the region around the modern village of Drama in Southeast Bulgaria (Fol et al. 1989, Lichardus et al. 1996, Lichardus et al. 2000,

Lichardus et al. 2000a). The expedition in fact was planned as a Bulgarian-German co-operation and indeed the names of some Bulgarians are present in the publication. In fact, however, apart from constant participation of Ilya Illiev and the sporadic presence of some Bulgarian students during the field seasons, the Expedition was closed to Bulgarians. Two exhibitions and three major publications have disseminated the results and the evidence from 18 years of intensive investigations (Fol et al. 1989, Lichardus et al. 1996, Lichardus et al. 2000a, Lichardus et al. 2001).

The most recent book was issued in both German and Bulgarian language and contains the most recent data and interpretations (Lichardus et al. 2000, Lichardus et al. 2001). The structure of the book is to present the evidence in the order in which it was excavated, not in order of their chronological occurrence. The claims and subsequent arguments are in scattered groups throughout the whole text and not helpfully summarized in a consistent conclusion. Thus, for example, on the basis of the map of the Aegean, the Balkans and the North Pontic steppes (Lichardus et al. 2001:1) with a delineated area that unites these three "cultural entities"[3] and some common research issues briefly mentioned in the introductory chapter, one can only guess at the place of the Drama microregion in the overall archaeological picture of Bulgarian prehistory. Indeed, evidence for long-distance contacts has been discussed in the publications (Lichardus et al. 2000: 161-174), underlining the significance of the region in the contemporary prehistoric world (e.g. contacts with the North Pontic steppes and the Aegean). However, no explanation was ever given for why and how these contacts have occurred and the sequence of their directions was extremely briefly mentioned only in the last section of the publication (Lichardus et al. 2001:194).

A similar difficulty is valid for following the arguments for the expedition research aim, which is formulated as follows: "...to find out a topographically bounded valley with human occupation traces but with settlement sites priority that are going to be systematically excavated and the settlement history from the Neolithic till Early Medieval period is going to be reconstructed along with environmental investigation" (Lichardus et al. 2001: 10-11)[4]. Chapter six is supposed to present this reconstruction, where occupational stages are mainly given in terms of pottery phases, while features and structures are very briefly mentioned. Environmental investigation results are, again, scattered throughout the text, selectively and very briefly summarized in Chapter six, with very little evidence provided, which gives rise to serious doubts about their validity.

Despite the evident contribution in gaining new empirical data and in introducing microregional studies as an appropriate method of investigation, the Drama project seems to misunderstand some of the important issues in regional studies. The site distribution map shows 20 sites within the microregion (Lichardus et al. 2000: 11) but just three are published in detail. Evidence for the remaining 17 is only briefly mentioned, thus leaving a big gap between the apparently intensively occupied Drama microregion and the one presented in the publications. An imbalance in presentation of archaeological data, interdisciplinary investigation results and interpretations led the Drama team away from their stated microregional research orientation. Huge attention was paid to the definition on phases of prehistoric pottery development, perhaps because, on the one hand, it contradicts the so-far accepted Bulgarian relative chronology based on pottery typology, and, on the other hand, because pottery was the main source for claiming the presence of a certain occupational stage in the surveyed area. The features containing this pottery, whether ceramic scatters, pits or houses, tend to lack any attempt of interpretation in terms of social practices, settlement pattern or intra- and inter-site relationships. Similarities in pottery were the only inter-site link to be mentioned. The palaeo-geographical conclusions were not justified with reference to the data and the selective cross-reference to earlier publications led to a serious confusion about relations between the people and their environment.

The lack of established settlement patterns and overall reconstruction of human –environment relations throughout the occupational sequence of the region resulted in a failure to provide a coherent picture of life in the microregion as a whole. Reasons for why and how the region was settled, abandoned or reoccupied remain unclear. For inexplicable reasons, samples for C14 dates were never taken, with the consequent loss of opportunities for solving many of the chronological issues widely discussed in the publications. Changing or recurrent patterns of dwelling, land use, social practices, etc. were not discussed. The human impact on the landscape was not considered as an issue, since there were neither pollen samples taken nor proper publication of plant remains studies.

Answers to all these questions will perhaps be forthcoming in future monographs in the Drama project series of microregional publications.

[3] Such mapping that divides Bulgaria into East and West parts challenges the common acceptance among Bulgarian prehistorians of the massive mountain range of the Stara planina as a boundary. However, neither of the concepts (East/West and North/South contact axis) was ever formally and broadly discussed.

[4] The translation into English is mine on the basis of the Bulgarian issue. I am aware of its unevenness in English but my deliberate intension was not to put words and phrases that might sound better in English but will change the original statement.

3.3.2 Territorial analysis – primary investigation method in microregional studies

Introducing the method

In 1970, Higgs and Vita-Finzi formulated the term site catchment analysis (SCA) and introduced it as a proper field and interpretive approach to prehistoric settlement study. This followed their practice experience and was theoretically inspired by von Thünen's model of Das Isolierte Stadt (von Thünen 1826, new ed. 1966), re-introduced into modern geography by Chisholm (Chisholm 1968). Geographical approaches were not a novelty in archaeology (Fox 1923), neither were subsistence issues (Clark 1939, 1952). But Higgs and Vita-Finzi were the first to integrate a number of approaches – geographical, ethological, economic and anthropological – in a coherent method of investigation for prehistoric settlements and their surroundings. Originally, the method required the determination of a ring of 5 km in radius around an agricultural site and 10 km or two hours' walking time for non-agricultural sites. The latter was derived from anthropological data (Lee 1967), the former on the basis of Chisholm's study of Sicilian farms (Chisholm 1968) and then first applied to the economic status of Natufian sites in Palestine (Higgs and Vita-Finzi 1970). Available resources within that ring were documented in terms of quality and type of soils, their potential for certain vegetation or cultivation (arable, good grazing, rough grazing, no potential), as well as accessibility to prey. For agricultural sites, inner rings (1-4 km in radius) were also defined in order to weight the resources in terms of cost/distance relations. The basic assumption of the model was that least-cost strategies of subsistence influence site location and catchment area (Higgs and Vita-Finzi 1970).

Review of SCA development

After its formal introduction in archaeological theory and practice, SCA was both highly debated and applied in various ways during the 1970s. A review of SCA literature reveals a high degree of self-criticism among the method's followers that resulted in refinement and improvement to both the theory and the practice of SCA. Thus the catchment area was reduced to 1 hour and 10 minutes' walking (1km- my note) (Jarman and Webley 1975); the central place of the site was considered an appropriate in the case of plant foods or cultivated crops subsistence but not applicable for the catchment of mobile resources such as animals, for instance (Bailey 1997); the ring-like perimeter and size of the catchment area, especially in cases of overlapping territories of adjacent sites, appeared to be inconvenient and a more flexible size and shape were assumed (Dennell and Webley 1975); the SC of any site should be considered in relation to and in the context of its regional potential (Flannery 1976); and the evidence for potential resources should be compared and justified to actual site evidence (Bailey and Davidson 1983). Finally, a number of factors, particularly social factors, were gradually considered as additional (but not alternative) constraints on site location (Roper 1979, Bailey and Davidson 1983).

Each application of SCA was a contribution to the theoretical background of the model. The element of the approach most in question appeared to be the name, and hence the underlying implications, of SCA. The lexicon of the method was enlarged with terms as site-territory area, site-exploitation territory, actual field, annual territory, temporary annexes, etc., whose aim it was to resolve the inconsistencies in the use of model and the evidence from particular case-studies. Each of the investigations, however, was dealing with resources – raw materials, animal and plant accessibility, their human exploitation and site location. Flannery suggested that the catchment area should be investigated from the evidence found within a settlement (Flannery 1976), an idea developed by Dennell (1978), who proposed "that catchments be used to refer to objects and their movements around the landscape, exploitation territories to people".

The first part of this statement has been already criticized, since an "exotic" object may appear in a "local catchment" (Gamble 1993), while the second claim for the relationship between exploitation territories and people returns to the original concept for SCA.

A detailed overview of SCA and its applications until 1979 was made by Donna Roper, who concluded that SCA favoured different kind of research aims and objectives such as the determination of the feasibility of various forms of economy, modelling of the settlement pattern and the study of demographic process (Roper 1979). Further contributions were discussed in Bailey and Davidson's article, that was one of the last SCA case studies in the 1980s (Bailey and Davidson 1983). After years of various applications and attempts to answer the ever-growing criticism, SCA ceased to be an important issue in the mid-eighties. It was neither criticized nor mentioned. In the context of the increasing post-processual trend in archaeology, the research potential of SCA diminished and was no longer an area of active research interest.

SCA received a substantial amount of critique from outside its circle of followers. Some of the method's shortcomings were solved even prior to their formal critique (e.g. Hodder and Orton's (1976) critique of the concentric circles had already been reconsidered by Dennell and Webley (1975)), while others were the object of constant refinement. Most important among the latter were the least cost assumption and the use of modern land use patterns as a source for

palaeo-land use. Answering the modern land use objection, SCA case studies started to include a review of palaeo-environmental changes, aiming to reduce the "modern" biases in SCA results (Bailey and Davidson 1983, Gilman and Thornes 1985, Chapman et al.1996). Least cost criticism is a part of a more general critique of SCA concerning the "economic" issues of the method that will be considered in some detail later. Here, it is noteworthy that, without being considered as deterministic, the least cost assumption was argued to be valid in numerous archaeological case studies (e.g., Gilman and Thornes 1985, Limp 1989, 1990). As an answer to a critique of least cost, ethnographic evidence, according to which this concept was practiced among traditional societies, was summarised in the last of the British Academy Early Farming Projects volumes (Jarman et al.1982).

An original application of SCA was made in the Maddle Farm field project (Gaffney et. al 1985). It extends the number of factors through which past human behaviour could be studied and explained. The inclusion of domestic animals and their role in manuring practice is an important contribution to the refinment of the theory and the methods of SCA. The Maddle Farm study is particularly relevant for the current study as it argues that domestic animals were kept in immediate proximity to the settlement, for reasons of milking and ready transportation of concentrated manure.

Looking for an acceptable explanation for expulsion of SCA from archaeological theory and practice in the last 15 years or so, the most evident reason appeared to be the method's "economic" orientation, which does not favour the "social" priorities of the interpretive framework of recent post-processual archaeology. An opposition between social and economic factors was alleged as the principal theoretical contradiction of SCA. Prior to formulating SCA as a milestone in palaeo-economical studies (Higgs 1972), social and economic issues used to be considered as different but inseparable aspects of the past and were studied as such (Clark 1939, 1959, Sherratt 1972).

This supposed social/economy dichotomy was exposed after the intensification of the application of "ecological" models in archaeology in the late 1960s and early 1970s (Butzer 1972). Higgs and Jarman emphasised that "the study of economy, the major selective force in prehistory has, until now, largely been ignored" as a result of years of dominance by the cultural model (Higgs and Jarman 1969: 40). This triggered the initial critique of the "deterministic relationship between economic strategy, resources and technology" and gave alternative reasons for site location as defence, access to water, roads, ritual places, etc. (Hodder and Orton 1976). Since then, many arguments were adduced to favour the primacy of either social or economic factors in prehistoric site location, along with studies, however, that consider them as complex, inter-related variables (Sieveking et al. 1976). Although social factors started to be recognized in SCA studies in the early 1980s (Bailey and Davidson 1983, Gilman and Thornes 1985), the debate was exhausted and SCA appeared to sink into academic oblivion.

SCA and GIS

A partial vindication of the SCA concept was to appear in the early applications of GIS in archaeology. The traditional application of this new analytical tool-kit can be seen in the exhaustive settlement pattern study of Late Woodland horticulturists in New York State area (Hunt 1992), the study of the island of Hvar in Dalmatia (Gaffney and Stančić 1991) and the settlement pattern study of the LBK in Central Germany (Saile 1997). All of these studies related settlement location and any subsequent changes to some kind of environmental variable (soil, slope, etc). Apart from the obvious simplification of the human/environment interrelation, these applications promoted GIS and SCA as a proper complex methodological tool in settlement patterns and regional studies. Their importance can be relevantly evaluated on the ground of the then prevailing predictive modelling in GIS applications.

Predictive modelling (PD) of archaeological site location has a long tradition in GIS practice and maybe the greatest research efforts and resources of GIS application in archaeology have been spent in its development and improvement. It employs a number of techniques and methods but its basic assumption is that there is a link between a site location and its surroundings reconstructed through measurable environmental variables. This is more or less equivalent to the SCA concept, although the term has never been mentioned. Predictive modelling has been broadly applied in Cultural Resource Management (CRM) and planning development (for details for PD and CRM chapters 9, 13, 14, 18 -24 in Allen et al.1990, and chapters 1 - 3 & 26 in Lock and Stančić 1995).

As mentioned earlier in this chapter (see p. 20), GIS applications have been heavily criticised because of their implicit environmental determinism (van Leusen 1995). Since SCA may well be vulnerable to the same critique, this is the place to discuss the issue in some detail. The debate dates back to the 1980s, when the post-processual movement in archaeology criticised the straightforward environment – human adaptation link as simplistic and omitting any social aspects in human development. In all the environmental determinism critiques, however, it is not clear why a clearly observable relationship between some settlements and certain soil type or the connection of some

barrows to a South Eastern aspect is "deterministic" and hence "bad" according to the contemporary archaeological interpretive framework. It is the successive explanation of such an interrelation and most of all "the change " in this pattern of interrelations that is the reason for the severe criticism (e.g. settlements were located in a particular place because of the fertile soils and when the latter were exhausted, settlement locations have changed). However, I was not able to identify what the possible explanation of environment / settlement location relation is according to the "social" adherents of human development. While consistent in their ED critique (such as Hodder's criticism of the systems approach in archaeology, of which ED is considered a part) and the presentation of alternative explanatory modes (e.g. contextual archaeology) (Hodder 1986) social and cognitive archaeologists tacitly avoid the meaning of environmental factors and hence, reaching the other extreme that easily can be called "social determinism".

This unhelpful formulation of "determinisms" results in an ungrounded opposition between environmental /economic and social factors, in which the former are considered as behavioural response and adaptation and the latter are considered as the most important in the human development as they are the driving force of cultural change. This opposition will be discussed in the following section of this chapter. The comment I'd like to make here is that the physical background is more likely to be relevantly appreciated in the case of environmental extremes (e.g. desert or constant snow coverage) where geographic, weather or any other conditions play an important role in social practices (e.g. recurrent journeys for water or social gatherings for the collective hunting of whales), while, in less extreme conditions, environment factors seemed to be either over- or under-estimated. Most probably, people needed to be well integrated with their surroundings and it is our AD 20th century investigators' evaluation that considers such an interrelation deterministic or adaptive. In an attempt to escape from the ED critiques in their renewed study of island of Hvar, Gaffney and Stančić (1995) placed emphasis on the distribution of stone cairns, seeking to investigate the landscape of perception. What they seem to miss is that it was the karst environment of Dalmatia that made people clear some areas for agriculture, heap the stones with or without burial among them, following what most was probably a consistent socio-economic practice of relating everyday activities (agricultural fields), ancestors (burial mounds) and some purification and fertility rituals (empty cairns)(see Chapman et al. 1996).

Another property of the GIS toolbox – the cost-surface analysis - was indirectly criticised, since it rests on the least cost presumption. While I would agree with the general disapproval of the uncritical application of behavioural patterns to the past (Hodges 1987, Shepherd 1999), I'd like to suggest that, before overruling certain "modern" models, one should examine the evidence against such a model and provide an alternative behavioural pattern. In the case of the least cost assumption, it means that, as long as some ethnographic and off-site evidence suggests least cost strategy as relevant, it should be considered as one important influence on site location but not the only one. After a proper joint investigation of the available archaeological and environmental data, it is possible that other factors (e.g. defence) were more important in the site location. Only after that, least cost assumption should be considered as a factor with no or secondary importance in the particular case study.

The development of GIS packages produces the results of cost surface analysis in terms of time (not just in distance as in the original SCA), effort, least-cost paths, cumulative cost surfaces, multiple least-cost paths and least cost networks (van Leusen 1999). Thiessen polygons were spatial pattering adopted (Hodder and Orton 1976) and applied (Hodder 1972, Renfrew 1973) by archaeologists after modern geographical applications (Haggett 1965); this is a routine operation in cost surface analysis. Thiessen polygons are taken as integrating political, administrative, religious, etc. entities by considering space as two-dimensional, flat and isotropic (van Leusen 1999). However, when overlaid with a cost surface slope map, for example, the outcome map will justify the relevance of the defined areas according to one aspect – in this case, terrain slope. Several such overlays are possible (e.g. hydrology, soils), showing the integrity of GIS data and the flexibility of GIS analysis. Thiessen polygons and SCA are usually opposed in archaeological theory and practice literature (Hodder and Orton 1976), while, in GIS analysis, they can very often be effectively combined (Savage 1990, Gaffney and Stančić 1991).

As mentioned earlier in this chapter, "environmental" and "landscape aspects" should not be divided into different parts of a regional settlement study. Two case studies are presented to illustrate a consistent approach to both archaeological and environmental data which establishes a coherent socio-economic and spatial pattern: the first in prehistoric North America (Savage 1990), the second in prehistoric Spain (Verhagen et al. 1995). Both studies comprise a reasonable body of original and general archaeological theory, as well as some methods and techniques not common in GIS practice (e.g. models of social grouping (Savage) or introducing domains as socio-natural descriptors (Verhagen et al.). They are included in the SCA section, since both of them are either referring directly to SCA (Savage) or denying the traditional SCA concept but, in fact, re-introducing it in its refined variant

of territorial analysis (Verhagen et al.). The two case studies are also chosen as, according to my view, the best examples of theoretically grounded socio-economic studies revealing and using the ability and potential of GIS in archaeology to the full.

In his study of social organisation in the Late Archaic in the Savannah River Valley of Georgia and South Carolina, Savage starts from the claim that "models of social organisation can be conceptualised in terms of the social, cognitive and physical landscapes within which people live" (Savage 1990:). Following Dennell's (1983) subsistence/reproductive groups, Wobst's (1974) minimum/maximum band and Pred's (1986) geographic location approach, Savage hypothesises that the Late Archaic social landscape "consisted of maximum band social territories divided into minimum band subsistence territories"(1990). After a series of theoretical assumptions, defined test implications and GIS assessment of the test implications according to the available archaeological data, the hypothesis was confirmed. It was inferred that there were six habitual areas of different size, defined on the basis of Thiessen polygons from base camp sites, that were occupied by six minimum bands, forming a maximum mean band size of 497 people. Boundaries between the habitual areas were related to both edges and centres and two contact areas were identified. The sites within the research area were clustered and each cluster contained a variety of site types in terms of different temporal, spatial and functional uses. To achieve these results, Savage applies a non-conventional interpretative framework accommodating geographic location theory, models of social organization, boundary studies, site function study, demographic and subsistence models (Savage 1990). The main problem with this joint approach is its not very well defined common theoretical background in terms of both LA and GIS.

The second case study dealt with socio-economic activities in the Bronze Age in Southeast Spain (Verhagen et al 1995). Acknowledging the failure of SCA because "the social is abruptly disintegrated from the natural" ((Verhagen et al 1995:189) and following Crumley and Marquard's (1990) socio-historic and biophysical structures, Verhagen et al. develop a model of social space consisting of six socio-natural descriptors. They are called domains and are the domain of human reproduction and maintenance activities, the domain of food production, the domain of material technology production, the domain of raw material and artefact transaction, the domain of political and administrative organization and the domain of the ancestors. In the case study of the Vera Basin in Southeast Spain, the domain of food production was investigated via an integrative, hierarchical framework containing three levels of data transformation. The first level is the representative level, referring to climate, geology, soils, etc., the second level is the descriptive level, dealing with site location, site intervisibility, transportation surface, etc., and the third is the interpretive level that represents the dynamic models of subsistence, demography and human/land interaction. As the input point of this framework, GIS form the link between relational and mapping database and, together with archaeological, social/historical data and environmental data, it is direct related to the first level and indirectly to the other two levels. The descriptive level in Vera Basin case study includes distance analysis (to the coastline, to the dry river beds, etc), analysis of the surrounding of each site (refined SCA) and visibility analysis. The results of cost surface analysis of the three investigated sites showed that each site's one-hour territory had differential potential based upon their different sizes and outlines. At least two possible routes (paths) connecting the three sites were identified, thus showing the capability of GIS on the one hand and sensitivity to tackling and interpreting GIS analysis results on the other. It was also concluded that, in the Bronze Age of the Vera Basin, there was, "a natural type of landscape organization, incorporating cereal cropping, olives, oak groves and animal pasture as a diversified single system" (Verhagen et al 1995:203).

The aims of this short review of GIS applications which make active use of SCA are twofold. First, I wish to argue that the critique of ED and cost surface analysis as being too general is ill-founded; the critiques are also unhelpful in failing to provide an alternative approach to such data. Secondly, I attempt to reconcile the "landscape" and "environmental" approach in archaeology, giving productive examples of GIS studies combining these two approaches. As Verhagen et al. put it, "…humans do not adapt to the environment…rather, they are embedded in landscape evolution as a continuous structuring and restructuring of time-space, one that implies no teleological directive" (Verhagen et al 1995:190).

New perspective in territorial analysis

As stated in the introductory chapter, the concept of SCA will be applied in the current study. The brief review of SCA development in archaeological theory and practice revealed its various understanding and applications. This means that each new application of SCA, usually connected with a further refinement of the term, receives an introductory explanation. For the purposes of this study, further extensions to the existing SCA terminology was considered as an inappropriate, so the term SCA is going to be used to denote both Dennell's catchment area and exploitation territory. A similar application of SCA was utilised by Bailey and Davidson (1983). This follows my understanding that the recognition of local and non-local

elements within a site and its surroundings is important but that their study and interpretation should not be separated. The practice of delineating an area around a particular site to define its exploitation territory (a practice that will be followed in this study as well) does not contradict the concept of a broader catchment area, that should be inferred, and not assumed, on the basis of the available evidence.

This refined understanding of SCA has, in my view, great potential in microregional and settlement pattern studies. Instead of fostering a false opposition between social and economic variables, research efforts should be re-directed towards the establishment of a flexible model of investigating and overlaying different kind of evidence that would subsequently facilitate a proper socio-economic interpretation. An improved SCA, along with the GIS technique, would provide a powerful base for the development of such a approach.

The first step in the refinement of SCA is to explore the social/economy dichotomy. It was not until 1996 that a different usage of word "economy" in archaeology was clarified both semantically and in content (Preucel and Hodder 1996). Terms such as ecosystems modelling, evolutionary ecology, cultural economics, cultural materialism and political economy were formulated to unify the diversity of approaches and interpretations of human activities such as subsistence, resource exploitation, production, distribution and trade. This is an example of how contemporary archaeologists tend to name events and issues of the past with modern, mainly English terms, and to fragment these event and issues into pieces that are convenient to study with present means and models (e.g. production of commodities to be studied in terms of political economy), not providing evidence that such division was really a fact in the period under study. This critique targets not the language limitations that we cannot avoid but the easily claimed and then broadly reproduced oppositions such as natural - cultural, social – economic or quotidian – sacred, without arguing that this opposition was valid in the period under study. Whether or not subsistence strategies in the past should be called "the economy", does not change the fact of their existence. I am not aware of any archaeological evidence which can prove that these strategies were disconnected from quotidian social and/or ritual practices. On the contrary, archaeological literature contains many examples of "ritual" objects found in non-ritual contexts, such as in the middle of an arable field, for example (see discussion and references in Harding 2000, Mikov 1933, Gaydarska 1998), as well as natural residues (animal bones and plant remains) and working tools discovered in a highly structured context of ditches, pits, enclosures and burnt houses (Richards and Thomas 1984, Chapman 2000 with references, Lichardus et al. 2001).

The potential for a certain class of subsistence strategy could be established through the exploration and evaluation of the resources around a particular site. This is far from claiming that each and every available resource was used and the intensity with which they were used. Land use and other subsistence patterns are to be explored after environmental data is juxtaposed to site evidence and, if possible, together with proper demographic analysis. The definition of subsistence activities should always be related to the social practices on which they are based and the implied social relations. The link between economy and social organization has already been pointed out long ago (Sherratt 1972) and it is my intention to extend and deepen this statement by claiming that subsistence and social practices were strongly interrelated. Social practices, here, are understood in a broad sense and their claimed relation to environmental factors is not to be seen as re-introducing the 1960s trend of environmental deterministic into archaeology, according to which cultural change was dependent on environment (Steward 1955, Struever 1968). Social practice is another term by which modern archaeologists seek to explain the daily, seasonal, year-round and life-time activities of interconnected human groups, through which their relations are maintained and/or negotiated for the establishment of successful reproduction and transformation.

Although not specially emphasising this point, some of the 1980s applications of SCA support socio-economic integration. An example is the claim for the existence of a "major aggregation site" and " three major site systems, each of which would have provided a regional integration of a variety of sites" in Palaeolithic Cantabria (Bailey and Davidson 1983). In another case, the refutation of long-lasting claims for the primacy of transhumance and metalworking in prehistoric Southeast Spain is achieved entirely on the basis of SCA (Gilman and Thornes 1985). Investigating environmental variables around a site is not necessarily "non-social", since such studies provide evidence for the "suitability" and sustainability of the area for camping, hunting, settling, burying, defending, worshipping and any other social practice, and hence the opportunity for reconstruction of each of these practices in accordance with the site data. As already argued in the Neothermal Dalmatia Project, SCA is a proper and necessary interpretive technique in each regional study (Chapman et al. 1996). The detailed small-scale survey of a site and its surroundings facilitates the multi-site sub-regional and regional studies of settlement patterns, land use, inter-site relationships and human – landscape interrelations. In this small-scale interpretive framework, in which regional studies consist of numerous SCAs, the site does not lose its identity and importance in an abstract theoretical model or does not represent the smallest (almost anonymous) surveyed unit in a large-scale field project but

it is simultaneously a significant demonstration of past social practices and a constituent of the overall regional breeding network pattern.

Returning to SCA, a helpful revision would be to make explicit links between environmental/ economic and social factors. Thus, for example, if important social issues imposed the setting of a certain settlement in a particular location, it is the environment of the place that supports the continued dwelling of the people at the same place. In contrast, if a site retains the same catchment area and exploitation territory but the actual settlement is moved, this alerts us to some form of social or other constraint. An example of such inter-related constraints could be the models of "restricted" and "extended" mobility of the settlement patterns in prehistoric Turkish Thrace (Erdogu 1999).

Any new application of SCA should be based upon past experience and an open and critical mind. Settlement and subsistence strategies should be inferred from the evidence of each concrete case and recurrent and changing patterns are to be equally anticipated. The results of environmental investigations must be checked and cross-referenced with site and off-site evidence, and only then a reconstruction of settlement pattern, land use, subsistence and social practices of the surveyed area could be suggested.

3.3.3 Summary

For the purposes of this study, the investigation of social change will be integrated with landscape archaeology, study of material culture and its depositional practices and microregional studies, as an integral part of settlement archaeology. The overall aim is the development of a coherent socio-cultural reconstruction of life in prehistoric South East Bulgaria. One productive way of integrating landscape, material culture and social practices is to regard them all as aspects of Bourdieu's (1977) habitus, through which people orient themselves to everyday tasks with reference to broader, but unsaid, structural principles. Thus the ways in which hunting is carried out near or far from a settlement is just as much embedded in habitus-derived principles as the structured deposition of fragments of grindstones in a settlement shaft. The broader structuring principles of social life can very readily be glimpsed in the micro-scale contexts of cooking, house construction, flint tool manufacture and pottery decoration. This point provides the potential for the integration of macro-scale and micro-scale - structure and agency - in every site in the study area.

3.4 GIS Methodology

The GIS analyses in the current study are made using for the most part standard commands within the widely available software ArcView 3.2. On the basis of a digital elevation model, standard information for elevation (Fig.3.4.1 – on CD), slope (Fig.3.4.2 – on CD) and aspect (Fig.3.4.3 – on CD) was extracted. On this basis, viewshed and cost surface analyses were performed. Paths between pairs of sites and between all the sites were derived on the basis of cost distance analyses. Visibility analyses from paths were conducted as well. Finally, a combination of operational tools was used to study the soil distribution around the sites (Fig.3.4.4 – on CD).

An initial question concerns the presentation of site location. Out of the 28 sites in the study area, five sites (Obrutchishte, Polski Gradets pit site, Tcherniova, Taniokoleva and Kurdova barrows) have an uncertain location. This fact is discussed in each of the five case studies. The reason for this reference to the uncertainty in site location is that the paths to these five sites from all the remaining sites are displayed in each case study of the logistical GIS view and may contain some bias in the path track and their visibility. However, the sites have been given several alternative locations, all in the same general area in which they have been discovered, so huge bias in terms of cost or visibility from the paths are not to be expected. More substantial differences are to be expected in the static viewsheds.

Viewsheds in this study are calculated from a cell with an area of 1 ha (100 x 100m). In other words, the visibility/invisibility is derived from a place in the landscape that is 100 x 100m and results are given for places in the landscape that also cover an area of 100 x 100m. So if a point denoted as a site falls in one such visible or invisible cell, it is respectively considered as visible or invisible site from the point from which the viewshed was run. Some of the sites fall on the edge or close to the border of visible and invisible cells. In these cases, it is difficult to claim specific visibility status and both visibility and invisibility are mentioned in the text. Subsequently, the sites were moved towards the centre of the cell where they are located, in order to avoid further ambiguities in the viewshed analysis.

The elevation value from which any viewshed is performed is derived from the elevation data and is not interpolated as the mean value of the surrounding cells. This was imposed by the large errors in the elevation value (and hence the viewshed itself) derived by interpolation. An observer height of 1.50m was added to the elevation value to produce the height from which the visibility analysis is performed. Additional heights were added to some of the

tells and barrows, depending on the way the sites developed and grew in height, through the accumulation of occupational remains. Subsequently, viewsheds were run from these points in order to check the pattern of visibility change through time (before, at the time of and after the site's formation).

Cost distance analyses in the study are based on slope. The slope and the aspect are automatically derived from the digital elevation model. The results of the cost surface analyses are displayed on the logistical GIS view as strips in graduated colour and are called in the current study – cost strips. By default, the number of cost strips is nine; in other words, the landscape is divided into 9 zones that correspond to the accumulated cost needed to reach any point in the landscape from the site for which the cost distance analyses was performed. It is possible to customise the number of cost strips in accordance with the user's aims and objectives. In Figs 3.4.5-3.4.7 (on CD), such a re-classification is shown, in which one and the same data was arranged in 6, 9 and 15 cost strips. This indicates that the cost distance with the six zones is too generalised, while the one with the 15 zones is too detailed. In terms of site distribution, despite the inevitable differences between the three examples, the relative distance between the sites is generally similar – e.g., in the case of the 6-zone classification, the six sites in the Northeasternmost part of the study area fall in one cost strip before the last; in the case of the 9-zone division, the same sites are again in one cost strip – this time two before the last; and finally, in the 15-zone classification, the sites fall in two adjacent cost strips – two and three before the last. In this study, the default figure of nine cost strips was accepted as the most useful compromise of the accumulated cost and was applied to all case studies.

There are several ways of calculating the accumulated cost, most commonly time and calories (van Leusen 1999, Wheatley and Gillings 2002). The version of ArcView used in the current study lacks a ready algorithm for the estimation of time. Due to lack of research time and resources, time estimations of the cost distance between the most distant sites along the East/West and North/South axes have been made using ArcInfo. The figures of 6 hours for the 17 km along the valley between Galabovo and Gudgova tells and 10 hours for the 20 km over the more hilly routes between KMBC and Gonova mogila represent the maximum times needed to cross the study region. Therefore, the duration of a journey along any other of the paths in the study region is shorter - often considerably shorter - than the above figures. In other words, all sites can be reached from every other site within a single day's journey.

So far, a number of attempts have been made to extract natural pathways on the basis of topographical features withing a given area (Jenson and Domingue 1988; Kweon and Takeo 1994, David 1994) but only the recent study by Bellavia (2002) reached successful conclusions. In the view of the very complicated mathematics, such an attempt has not been made here (see p. 181).

The paths in the current study are derived automatically on the basis of the cost surface and cost direction from each site. To avoid repetition, and to save word and computer resources, a path between one pair of sites is displayed and discussed in the most relevant case study rather than in each of the sites' logistical discussions. This is possible since, in several case studies, it was shown that, although estimated on the basis of different cost surfaces, the paths between two sites formed a perfect match in their tracks. A logistical network has been produced for each site and all other sites in the study region in order to establish and investigate the route network from the Neolithic up to the Bronze Age, in which any repetition and/or change is significant. However, in the discussion of each site, only the routes to contemporary or earlier sites have been taken into consideration. On each GIS logistical view, there is a visual presentation of paths such as earlier sites – later sites (e.g. EBA Galabovo tell – LBA KMBC). The presence of such paths in the general route network is important not because they were in use during the time of the earlier sites but because they show the development of the network through time – the patterns of change or repetition - in other words, how the foundation and/or location of later sites related to the existing logistical network.

Last but not least in this GIS analysis is visibility from the paths. It is important to point out that a viewshed from a path between two sites is not the sum of the viewsheds from both sites. Fig. 3.4.8 (on CD) shows the viewshed from Galabovo tell, the viewshed from Mednikarovo tell (Fig. 3.4.9 – on CD) and a visibility analysis from the path between them (Fig. 3.4.10 – on CD). It is obvious that the visibility from the path is greater, since it is considered from a number of points on the path rather than from just two points such as the sites themselves. The segments of the path are automatically made at each point where the path changes direction but the points are not visible on the screen. The visibility is calculated from the two ends of each of the segments, as well as from its middle point. On each GIS visibility screen, the viewshed from paths contains more information than discussed in the text. This is due to the word limit and the balance of research objectives in the current study. On the screen, there is a detailed quantified visibility, in which the visible areas are classified using an unique colour key according to the number of points from which the areas could be seen – e.g. the yellow areas are seen from only one point, the beige

areas from three points, the grey areas from four points, etc. In the text, only comments on general visibility pattern from paths have been made.
It is possible to reconstruct the visibility while walking along a path. However, it involves much additional computer-aided animation, which falls out of the purview of the current research (but for a recent instructive example, see Exon et al. 2000).

It was also important to perform a cumulative viewshed analysis that would unite each individual viewshed (n=28) in one common visibility grid. Such an analysis is used to investigate both the landscape visibility from sites and site intervisibility.

The area of GIS research which allows more innovative interpretative possibilities concerns the intervisibility of current sites with those sites occupied in (an) earlier period(s). The general intervisibility pattern between the sites was investigated in two directions. Since the landscape was inhabited in stages, it was important to establish the intervisibility between contemporary sites (real intervisibility) and one-way visibility between later and earlier sites. Therefore two different estimations were conducted. For a given number of contemporary sites, each has the potential to see the total number of contemporary sites minus one (itself). Thus, the total number of views for 6 sites is 30 (6 x 5 = 30) and the maximum number of possible intervisibilities (site A can see site B and site B can see site A) is 15 (30/2 = 15). Thus the percentage intervisibility for this group of contemporary sites is x/15 multiplied by 100%, where x is the actual number of intervisibilities noted. The value for x in each period is derived from viewsheds calculated for each site.

The calculation of the percentage visibility of earlier sites from a suite of contemporary but later sites is more complex because of multi-period occupations. Any site from the group under consideration is excluded from the target group of earlier sites if it has earlier occupation. The number of remaining contemporary later sites is then multiplied by the number of earlier sites to give the total number of possible visibilities. Thus, if there are 6 contemporary later sites and 5 earlier sites without any later re-occupation, the total possible number of visibilities would be 30.

In order to check whether the general cumulative visibility pattern should change if the viewing points are different, cumulative viewsheds from various combination of random points were performed. Four combinations were utilised:- 28 random points (CDFig.503) (which is the number of the sites), 200 random points (CDFig.504), 500 random points (CDFig.505) and 1,000 random points (CDFig.506) random points were performed. The implications of such an analysis are twofold. First, they should reveal to what extent the landscape visibility is dependent on site location and, secondly, it should indicate the intensity of visibility for those areas where the sites are located.

In the analytical stage of this research two significant problems were encountered. The first one concerns one case site intervisibility, in which one site can be seen and can see the second site but from the second site the first site is not visible. Such cases are possible (as the current study proved as well) but in the case in question (Klisselika and Gudgova tells), there is full site intervisibility between these two sites as tested during the field walking. The GIS error is most probably due to the big resolution (100 x 100 m) at which the viewsheds are calculated, and to which this pair of sites is sensitive.

The second problem concerns the diminishing landscape visibility with the increase of the observer/site height, which appeared for the first time at Manchova mogila case study. This triggered continuous and intensive investigation for the possible reasons of such unexpected result. I repeated the analyses using all the available properties of ArcView, as well as discussing the problem with other GIS practitioners. All my endeavours finished with one and the same result. However, when the same pattern appeared in the viewshed analysis of one of the possible locations of Taniokoleva mogila, which is situated to the South East of Manchova mogila, exactly in the area of recurring decreasing visibility, it made me infer that the reason may be some landscape particularities. The areas that are not visible from the 3-4 m barrow height are located in a gully to the South East of the sites, while, to a great extent, the hills along the gully remain visible in all the viewsheds. Van Leusen (1999) has argued that sites on high places are most likely to be visible from other sites/areas on high places, while sites in the lowlands are most likely to be visible from lowland places. In the case of Manchova and Taniokoleva barrows, landscape particularities such as slope, rock shape, etc. may have contributed to this general principle, which resulted in diminished landscape visibility for both barrows.

Chapter Four - Palaeo-environmental reconstructions

Introduction

For a very long time, environmental factors were either under- or over-estimated in Bulgarian prehistoric investigations. If natural aspects were included at all in archeological research, they were most often dominated by a single factor, such as subsistence (soils, vegetation, water springs), possible resources (flint, copper) or landscape (outcrops, self-defence, etc). Very rarely is the physical background considered as complex, thus permitting effective archaeological interpretation (for an exception, see Todorova 1984).

Joint archaeo-environmental investigations are extremely rare (Dennell and Wembley 1975, Bozilova and Ivanov 1985, Bozilova and Atanassova 1989, Lichardus et al. 2001). More often, plant and animal bones remains from archaeological sites were investigated with the interpretative emphasis on subsistence strategies rather then on ecological conditions as a causative factor at all (Dennell 1973, Todorova et al. 1975, Todorova et al. 1983, Raduncheva 1976, Popova 1995, Marinova 1999).

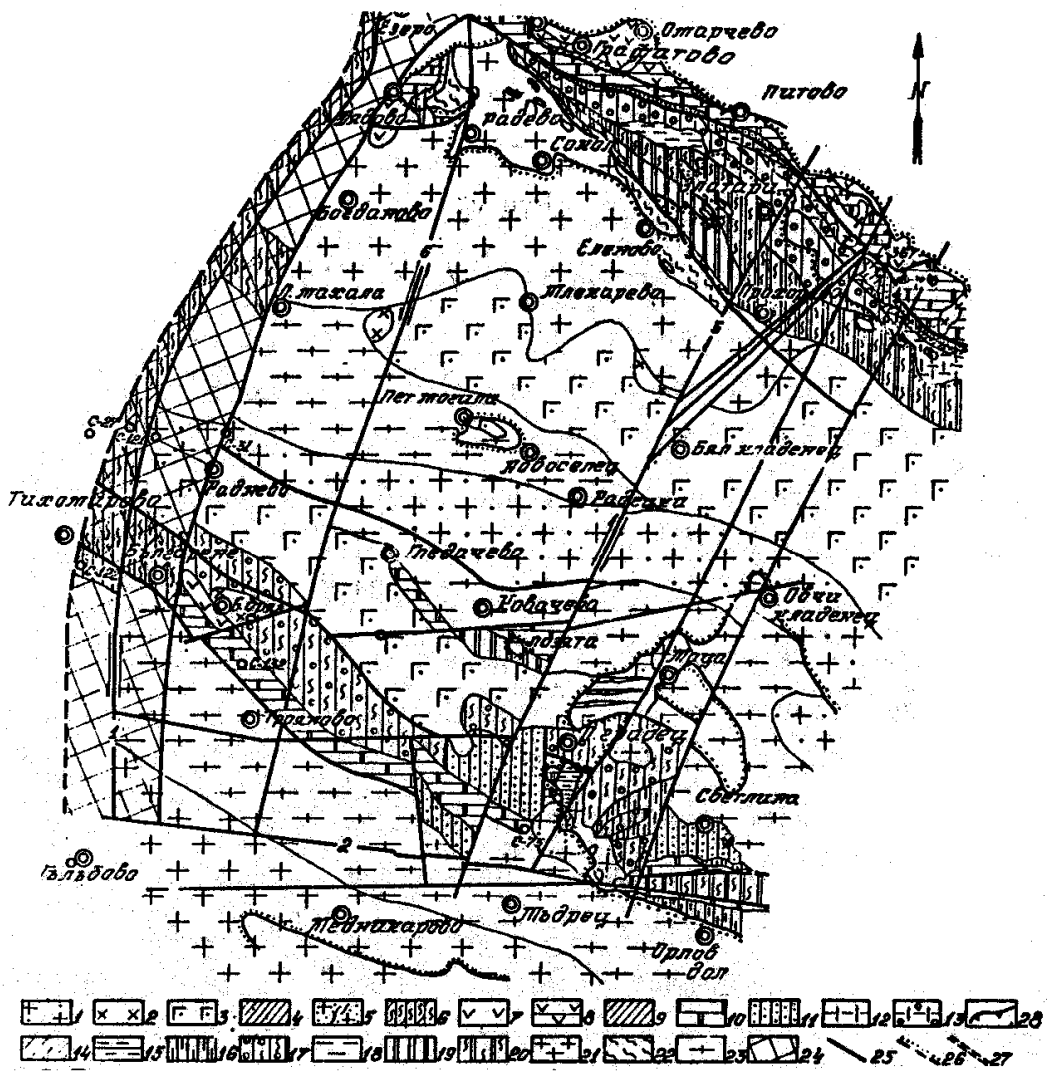
However, the importance of environmental factors was underlined to support two hypotheses – for the secondary Neolithic revolution in the Balkans and for "the tragic end of the glamorous Chalcolithic civilizations" (Todorova 1986; Todorova and Vajsov 1993: Todorova 2003). In this rather uncertain understanding of the role of physical background, the environment and changes in environmental conditions have yet to find their relevant place in Bulgarian prehistoric investigations. In the current study, it was presumed that rocks, soils, vegetation, etc. have always mattered for humans. However, the use of any of these as "resources" means that, to find out what their real importance might have been, one has to define their availability. Some "resources" such as rocks or minerals are the same from the time of the first occupants of the study area but their technological ability to exploit them may well have changed. Others, as climate and the position of river beds, may well have changed over time. The definition of continuities and differences between the present and past landscapes of the study region is the purpose of the following chapter.

Apart from morphological differences (two different catchment basins), the three small river valleys are geographically very similar. They are 1 - 3 km wide and surrounded by low, usually gently sloping hills, which rarely exceed 200m in altitude. Their climate and vegetation are also quite similar, while the geological sequences and contemporary anthropogenic impacts are significantly different. On account of these differences, as well as those pertaining to the availability of environmental data, the physical background of the study area will be presented in two different data sets. The first one seeks to unify the Sokolitsa and Ovcharitsa valleys, since they have a common environmental development. The second geographical data set concerns the Kalnitsa valley microregion, in the territory of the village of Drama, with its relatively low concentration of archaeological sites.

4.1. Geological data

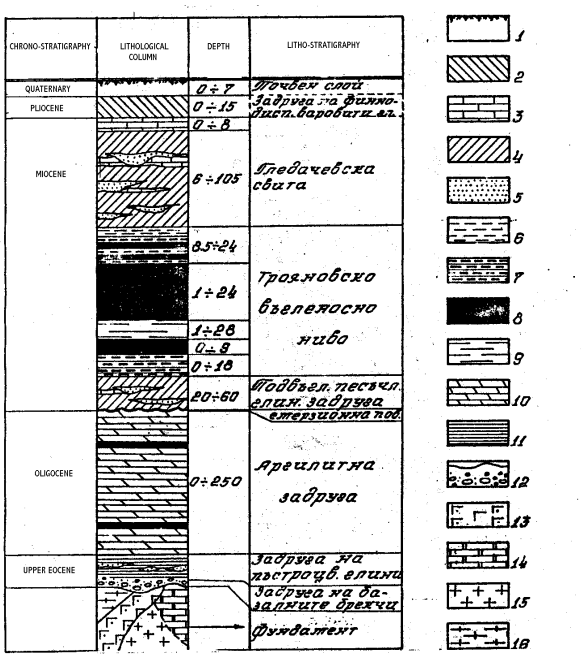
4.1.1.Maritsa Iztok - geological basement and geolithological structure

The geological structure of the Maritsa Iztok basin consists of multiple series of rocks of different ages. Their spread and depth of occurrence as given in Figs. 4.1.1-4.1.2 show a deeply indented palaeo-relief, formed after intensive tectonic movements. On the present surface, these very old rocks are visible on Svetiiliiski visochini (the St. Ilya Uplands), Manastirski vuzvishenia (the Monastery Hills) and the Sakar Mountain and as single spots amongst Neogene deposits. So far, there is no common agreement on the beginning of Tertiary sedimentation in the region. The earliest suggestion is for initial Upper Eocene (Priabonian) infilling (Fig. 4.1.1). The Tertiary sequence as presented in Fig .4.2.1 is accepted in general. Two important differences, however, derive from the two main data sources for the geological development of Maritsa Iztok coal basin. According to the first view (Nedialkov 1985, Manual 1981), coals are Miocene formations, with up to 250 m of strata, while a 15-m thick layer of fine dispersed clays represents the Pliocene. According to the other view (Nam 1995, Kirilova 1985), the Pliocene series is up to 300 m thick and contains the coal layers. Despite these disagreements over the dating of the Tertiary sequence, all the investigators accept the presence of Neogene lacustrine sediments in the study area.



Key: 1-5 Upper Cretaceous Series 1 – Granites; 2 – Diorites; 3 - Dioritic porphyrites; 4 - Contact metamorphic rocks; 5 - Greisen-like alternations in Gradets intrusive; 6 - Brecchia-conglomerates (undifferentiated Cretaceous series); 7 – 8 Upper Cretaceous volcanic-sedimentary rocks; 7 – Andesites; 8 - Andesitic tuffites; 9 - Turounian age -conglomerate reef formation; 10 –11 Triassic System; 10 - Dolomite Formation; 11 - Arkose sandstones and rocks from silicate carbonate formation; 12 – 17 Permian System; 12 - Felsite quartz porphyries; 13 - Spherulitic quartz porphyries; 14 - Quartz porphyry tuffs; 15 - Calc-schists; 16 - Quartz-muscovite schists; 17 - Brecchia-conglomerates (dappled conglomerate unit); 18- 20 Carboniferous (?) System; 18 – Low-grade schists; 19 - Metaquartz-porphyries; 20 - Metatuff-brecchia; 21 – 22 Undivided Palaeozoic; 21 - South Bulgarian granites; 22 - Low-grade schists (diabasic-phyllitoid complex); 23 - Pre-Cambrian granite-gneisses; 24 - Tectonic zone along Sazliika fault; 25 - Faults 1. Sazliiski 2. Sokolshki 3. Jujen Svetiiliiski 4. Severen Svetiiliiski 5. Gradetski 6. Radevski 7. Pundakliiski 8. Grafitovski thrust; 26 - Boundary of Tertiary distribution; 27 - Boundary of Troyanovo coal level; 28 – thrust.

Fig. 4.1.1 Geological map of Maritsa Iztok. Source: Nedialkov 1985



Key:

1.Soil layer
2.Fine dispersal calcareous clays
3.Limestones
4.Blue/green sandy clays
5.Sandstones
6.Grey/black clays
7.Black clay with coal intrusions
8.Coal layers
9.Thin stratum clays
10.Argillites
11.Reddish clays
12.Deluvial-proluvial sandy clays and gravel
13.Upper Cretaceous intrusions
14.Dolomites and marbles
15.South Bulgarian granites
16.Pre-Cambrian metamorphic rocks

Fig. 4.1.2 Geological sequence of Maritsa Iztok Source: Nediakov1985

4.1.2 Slumps and Volcanoes

An important natural feature of Maritsa Iztok, also utilised in cultural practices, is the phenomenon of mud-volcanoes. These are mound-like hills which can reach up to 8m high but they can be very small too (Figs. 4.1.3 - 4.1.4). They are distributed along the valleys of the Sokolitsa, Ovcharitsa and Eledzjik (a valley West of the study region).

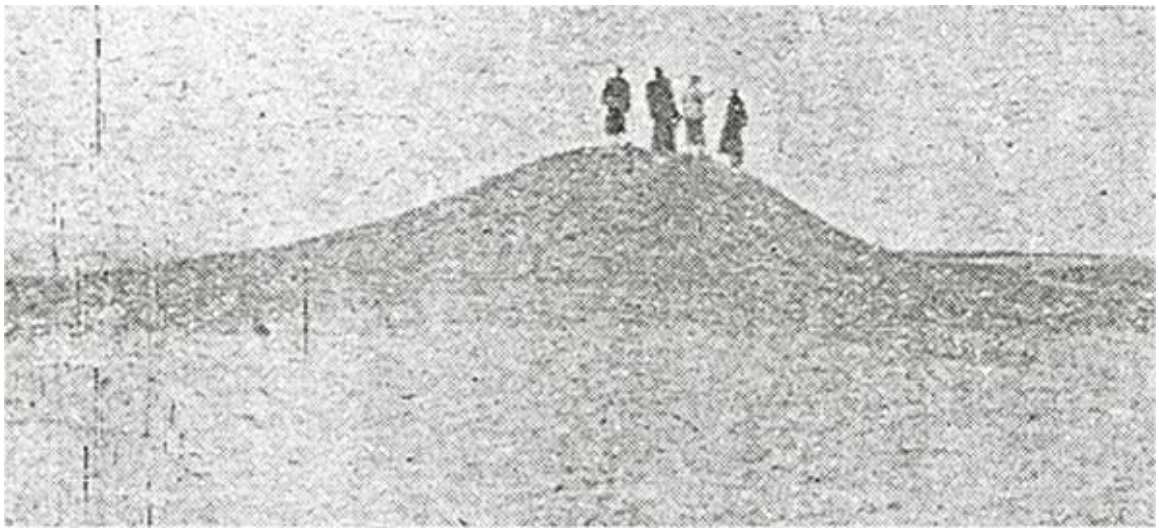


Fig. 4.1.3 Mud-volcano between Mednikarovo and Obrutchishte; Source: Koen 1952

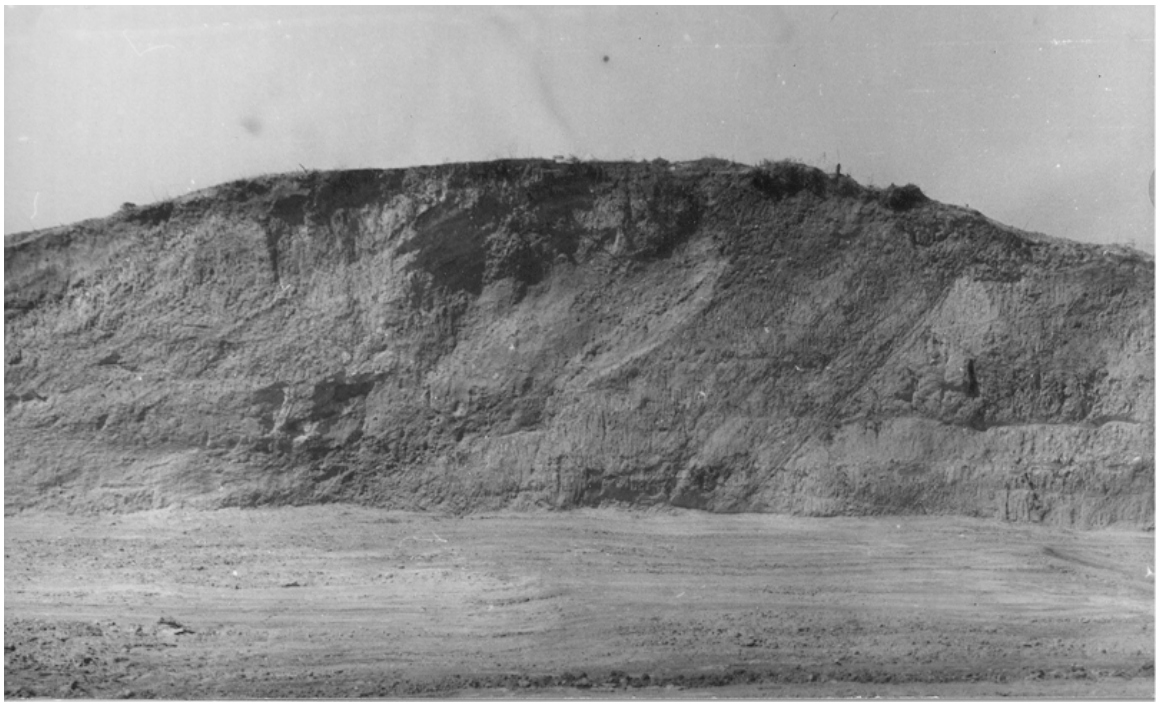


Fig. 4.1.4 Mud-volcano near village of Mednikarovo (known as Atanasivanova mogila); Source: B. Borisov – field documentation

Mud-volcanoes are not met elsewhere in Bulgaria and, in the case of Maritsa Iztok, are connected with coals and the geological substructure. There are several reasons for the appearance of these curious features but the first and most important one are the so-called "ancient slumps" on palaeo-relief slopes. The latter are the result of active, mainly positive neotectonics, most probably followed by seismological activity, as well as severe fluviatile erosion and intensive rainfall that result in rivers with a high water-level. Their dynamic is very similar to that of the present slumps. During the active period, if the slump's prism of active pressure reaches the coal layer, it causes swelling of the coals (Fig. 4.1.5).

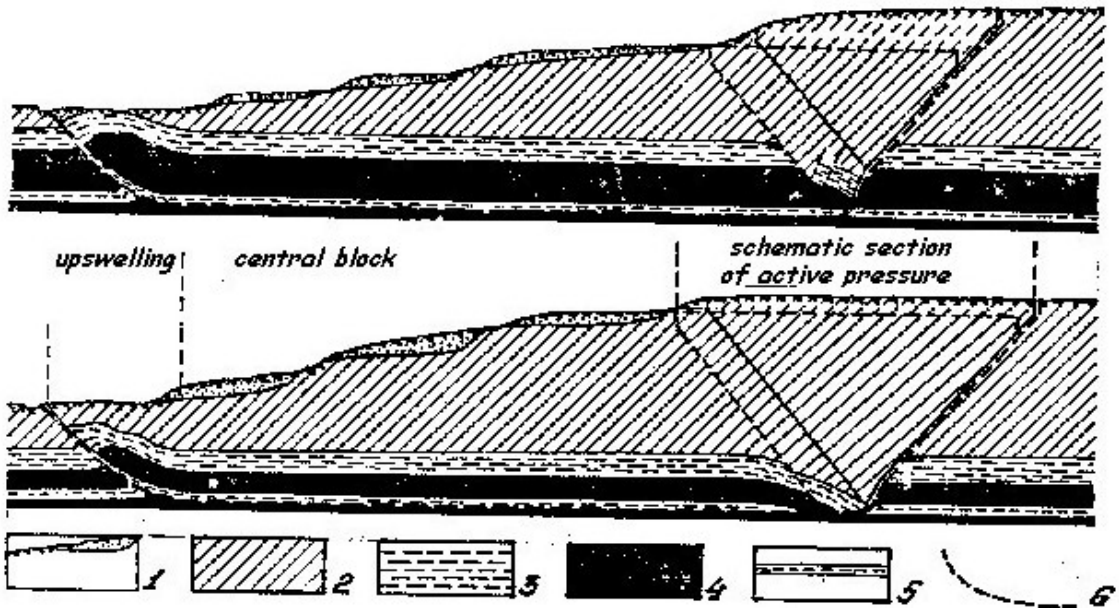
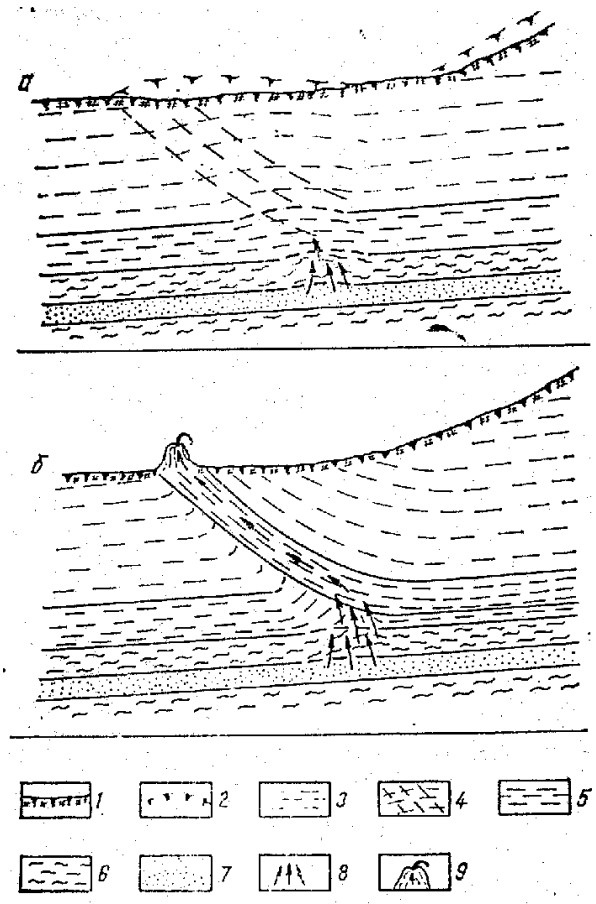


Fig. 4.1.5 Slump mechanism; Source: Nedialkov 1985 (Key as Fig. 4.1.2)

If this coal swell reaches the surface, it looks like a small, elongated mound. There are several such mounds that can still be seen along the valleys of the Sokolitsa and

Gradetska. Ancient landslips are distributed along the Sokolitsa, Ovcharitsa and Eledjik because they are related to fluviatile erosion. Most of the surface coal swellings are covered by terrace sediments now making the slumps stable. A few swellings, however, are not yet covered, which leaves the areas vulnerable to further landslips (Nedialkov 1985).



Volcanoes could abate or awake, they even could change their place but are always connected with ancient landslips and inrush waters. Usually they could be activated through the renewal of movements of the ancient landslips. The latter might appear as a consequence of coal exploitation. But they also could be activated as a result of fluviatile erosion. Natural eruption is not rapid and devastating but rather long-lasting. Such a burst may need a week to form a real volcanic shape until the fading of the slump movements. After the start of coal basin exploitation, some of the ancient slumps were activated and some new ones appeared of technological origin. Some of them led to the appearance of new, non-natural mud volcanoes (pers. comm., P. Karacholov).

When active, slumps may or may not produce mud volcanoes as a part of the process. The "eruption" of mud volcanoes is related to the faults and cracks in the swelling zone, when deep-lying inrush waters following the leaks in the sediments reach the surface, sweeping away coals from the swelling and spreading to form mound-like features (pers. comm., P. Karacholov) (Fig. 4.1.6).

Key:

1-Soil
2-Terrain deformation
3-Clays and sands above the coal layers
4-Deformation zone
5-Coal complex –clay and coals
6-clays under the coal layers
7-Sands under the coal layers that contain inrush waters
8-Sub-surface weak link and the leak
9-Mud volcano

Fig. 4.1.6 Mud –volcano forming process; Source: Georgiev 1976

4.1.3 Drama – geological basement and geolithological structure

Two main sources are available for the geology of the Drama microregion. The first one is the investigation results of the long-lasting German expedition. According to their team, the oldest rocks in the Kalnitsa valley are Pre-Cambrian granite-gneiss, biotite-gneiss, two-layered gneiss and amphibolite. A small phyllitoid formation of diabase completes the chart of Pre-Mesozoic sediments of the region. Triassic rocks are represented by quartz, sericite, schists and conglomerate, as well as by marblized limestone and dolomites. Jurassic limestone is in the form of schists with marl clusters. Intrusive rocks of Palaeogene Age in the area comprise gabbro, gabbro-diorite, diorite, quartz-diorite and diorite-porphyry. The detailed sequence and spread of the rocks in the Kalnitsa valley are given in Gaydarska (2004 : Fig. 4.1.7). Diorite-porphyry surface exposure could be found North, East, South and Southwest of Drama (Fol et al. n. d., Lichardus et al. 2001). Also visible today is some Permian granite in the Northeast edge of the contemporary village. Diorite and gabbro-diorite intrusions in the Mesozoic limestone are believed to lead to the formation of marble, as well as

to uplifting of Kalnitsa valley by 100-300m (Kubiniok 1996).

The second source for the Drama microregion is Bulgarian geo-survey data, according to which the spread of the rocks and their sequence is slightly different (Fig. 4.1.7 – on CD). The oldest rocks are formed by the Lower Palaeozoic Sokol formation, containing sericite-chlorite phyllites, argillite-like schists and schistic basic tuffs, situated near the contemporary village. The village itself is on Upper Palaeozoic middle-grained biotite granite (Sakar biotite –2). Triassic rocks are spread Northeast of the study area as an "undivided Iskur carbonate group", consisting of dolomites and marbleised dolomite limestone. Among them, spots of Upper Cretaceous diorite-porphyrite are distributed. The other Upper Cretaceous rocks are amphibole-biotite gabbro (manastirski pluton) and quartz-diorite. Neogene sediments are the most commonly represented in the study area and contain sandy clays, sands and coals of the Elhovo formation. Along the Kalnitsa river, Holocene alluvial formations are found - both on river beds and flood terraces as gravels, sands and clays.

4.2. Geomorphologic data and soils

4.2.1 Geomorphology and pedogenesis in Maritsa Iztok

Quaternary investigations in Maritsa Iztok have always been a part of the common geo-environmental study of the region. There are not special geomorphologic investigations and Pleistocene and Holocene deposits have not yet been differentiated. Generalized Quaternary sediments are represented by alluvium or diluvium clays and alluvium fan deposits (sands and gravels) (Kirilova 1985). Vertical neotectonic activity led to intensive denudation and caused cyclic river erosion. These cycles were synchronous with vertical movements and are traceable in successive down-cutting of the large rivers that formed several erosion-accumulation terraces. The total down-cutting of the river Ovcharitsa amounts to 65m, while 78m is recorded for the river Sokolitsa (Nedialkov 1985).

Quaternary investigations on the broader scale of the overall development of the Maritsa river terraces give some general information for the present development of the rivers in the study area of Maritsa Iztok (Fig. 4.2.1). For the Maritsa river, there are altogether 7 overbay and 3 bay terraces. The latter are the result of positive tectonic movements during the Holocene. For the Sokolitsa river, however, earlier terraces are also common. There are 4 overbay and 2 bay terraces. Around the village of Obrutchishte, the 4th and 5th terraces are of erosion accumulative origin. The alluvium there is 2m thick and contains sands and gravel. Bay terraces are found along the whole length of the river. Towards the lower course, the thickness of alluvium varies between 4m and 7m and consists entirely of sands (Angelova et al. 1993).

Two types of the oldest Bulgarian soils are distributed in the Maritsa Iztok area - smolnitsa and cinnomonic forest soil. Toward the end of the Pleistocene, unconsolidated lacustrine sediments formed low and relatively even relief, that, along with poorly drained geological substratum, caused meadow or meadow-boggy forming process under the conditions of a relatively warm and wet climate. This first stage of smolnitsa development was followed by surface drainage caused by the drying influence of gallery forest and forest steppe vegetation. These conditions are very similar to the present, when smolnitsa is one of the soils with the thickest humus accumulation horizon (Kirilova 1985).

Cinnomonic forest soils are developed on Pliocene deposits, as well as on calcareous or acid substrate. They are formed in more variable hydrothermal conditions, under the influence of sparse and dry deciduous forests and bushes succeeded by treeless areas (Kirilova 1985).

4.2.2 Soil distribution in Maritsa Iztok

The most widespread soils in Maritsa Iztok are leached smolnitsa. They are dark black, with 60-80 cm thick humus accumulation horizon that contains 2.5 – 3.5% humus. The high percentage of clay (up to 50%) in this soil determines its adverse chemical and physical properties. When wet, it is sticky and difficult to form a tilt and, when too dry, cracks up to 10cm wide and 1m deep usually occur. However, it is possible to till smolnitsa in the period following sufficient rain to soften the otherwise hard soil (pers. comm., P. Reynolds, *per* J. Chapman). A specific feature in Maritsa Iztok is the so-called "calcareous cavities" in the soil, as well as gypsum-like inclusions of different sizes that appear in the areas of Radnevo and Gledachevo at 100-150 cm in depth (Kirilova 1985).

Meadow smolnitsas have a limited distribution in micro-depressions with relatively high subsoil water level. Often these soils are affected by semi-hydromorphic salinity (Kirilova 1985) which makes them good for animal pasture.

Leached cinnomonic forest soils are the second most widespread soil type in Maritsa Iztok. They develop mainly upon Pleistocene sediments and are moderately loamy, with a soil profile not exceeding 80 cm and low humus content (1.5-2.5%). The humus percentage is slightly higher (2.0-2.5) than in the typical cinnomonic forest soils that developed on calcareous rocks East of the village of Polski Gradets. Upon hill slopes Northeast and Southeast of the same village, strongly leached to slightly podzolized (lessive) cinnomonic forest soils developed on granite or granite-gneiss rocks. These soils have very low humus content – often less than 1% (Kirilova 1985).

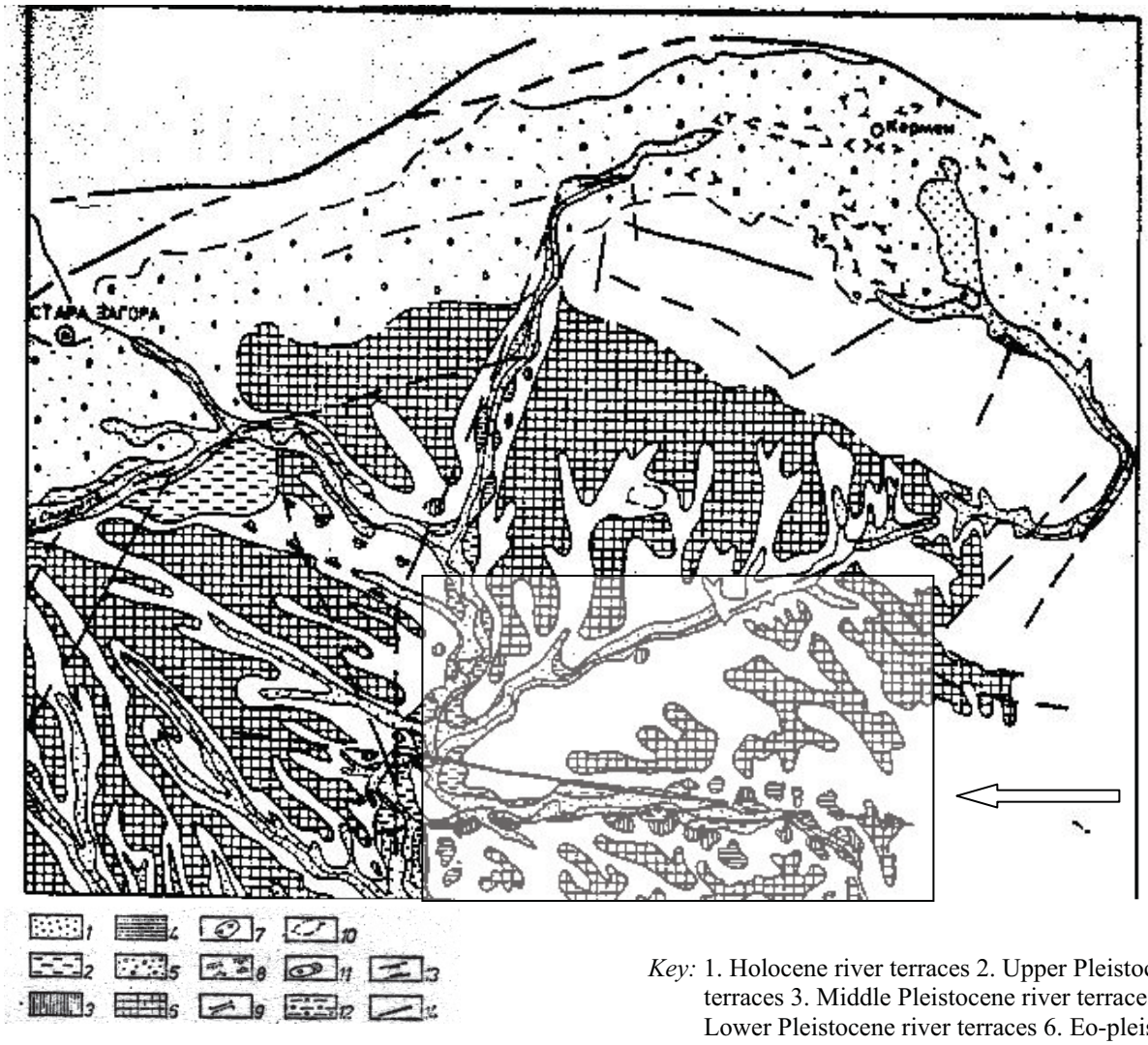


Fig. 4.2.1 Geomorphological map of Maritsa Iztok
Source: Angelova et al. 1993

Key: 1. Holocene river terraces 2. Upper Pleistocene river terraces 3. Middle Pleistocene river terraces 4. Lower Pleistocene river terraces 6. Eo-pleistocene (Villafrancian) levels and terraces.

Humus calcareous soils (rendzinas) have a limited distribution in the region. Calcareous inclusions in the surface Pliocene sediments formed moderately loamy rendzinas with a relatively thick humus accumulation horizon. Less thick and heavy loamy are the rendzinas developed on calcareous rocks in the Eastern part of Maritsa Iztok. Both soil sub-types have relatively high humus content (Kirilova 1985).

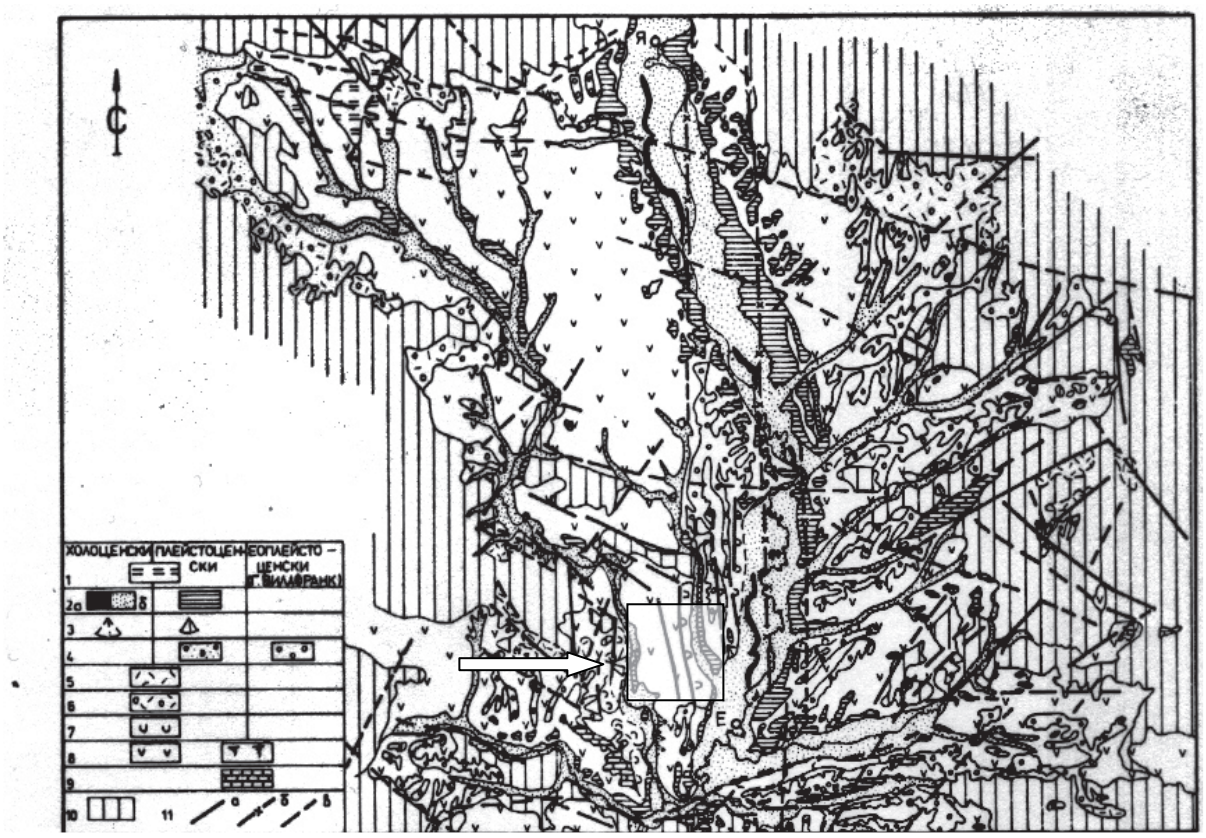
Alluvial meadow and alluvial-diluvial meadow soils are spread along the flood-plains of the Sazliika, Sokolitsa and Ovcharitsa rivers and the valleys of their tributaries, where the level of the sub-soil waters is high. They have a relatively thick humus accumulation horizon and high humus content. There are places where these soils appear in a complex with hydromorphic or semi-hydromorphic soils (Kirilova 1985). Saline soils are found along the river Blatnitsa, one of the tributaries of the Sazliika, and around the town of Radnevo.

4.2.3 Geomorphology and Pedogenesis in the Drama basin

Quaternary sediments of alluvium and diluvial layers of red clay and rubble-intrusive rocks cover almost all the Pliocene deposits of limestone, sand and clay (Lichardus et al. 2001). The thickness of the Tundja Quaternary deposits is up to 40 m but, for the Kalnitsa valley, it is less than 5 m. According to Kubiniok, environmental conditions in the last Glacial did not play any important role in the formation of the relief of the Drama microregion (Kubiniok 1996).

The stratigraphy of the Quaternary deposits in the Tundja lowlands, established through geomorphological surveys in the mid-eighties, shows that, in the study area (the squared area on Fig. 4.2.2), Holocene alluvial deposits with different facies are predominant, together with some eluvial deposits and the pre-Quaternary rocks (Angelova et al. 1991).

The identification of pedogenesis in the Drama region



Key: 1. marsh sediments 2. alluvial sediments 3. proluvial sediments 4. alluvial-proluvial sediments 5. diluvial sediments 6.diluvial-proluvial deposits 7. colluvial sediments 8. eluvium 9. infiltrated limestone 10. pre-Quaternary rocks 11. faults.

Fig. 4.2.2 Quaternary sediments of the Tundja lowlands
Source: Angelova et al. 1991

was a priority in the palaeo-geographic survey of the area in the German "Drama" project. The soil formation results, however, are contradictory and in disagreement with Bulgarian data in general. According to the German Expedition's investigations, black earth (Schwarzerde) started to be formed prior to 4000 BC (towards the end of the Karanovo V period) (Lichardus et al. 2001). Other types of soils developed in the region are rankers of very fine sand developed on acid rock with 20 to 150 dip (profile type C and F). Surface brown soils (flach-mittelgrunige Braunerden) are also believed to have been distributed at some earlier time on the steeper slopes of the Drama area. Weakly developed soils (geringmachtige Boden) are formed on 130 slopes of calcareous porous sediments (kalkhaltigen Lochersedimenten). Humus-poor smolnitsa (vertisolartige Pedosole) develop on carbonate-rich porous sediments (karbonathaltigen Lochersedimenten) over basic rocks (profile type D and G). Along the Kalnitsa river, damp meadow soils (solonetzartige Aueboden) comprising dark-brown – black alluvium has been formed (profile type E). Marblized limestone in the Eastern part of the Kalnitsa valley favoured the development of brown calcareous loam (profile type A and B). All soil types have a high percentage of clay and are all difficult to cultivate by hand. Hence, Neolithic land cultivation was assumed to be meadow horticulture rather than field agriculture (Kubiniok 1996).

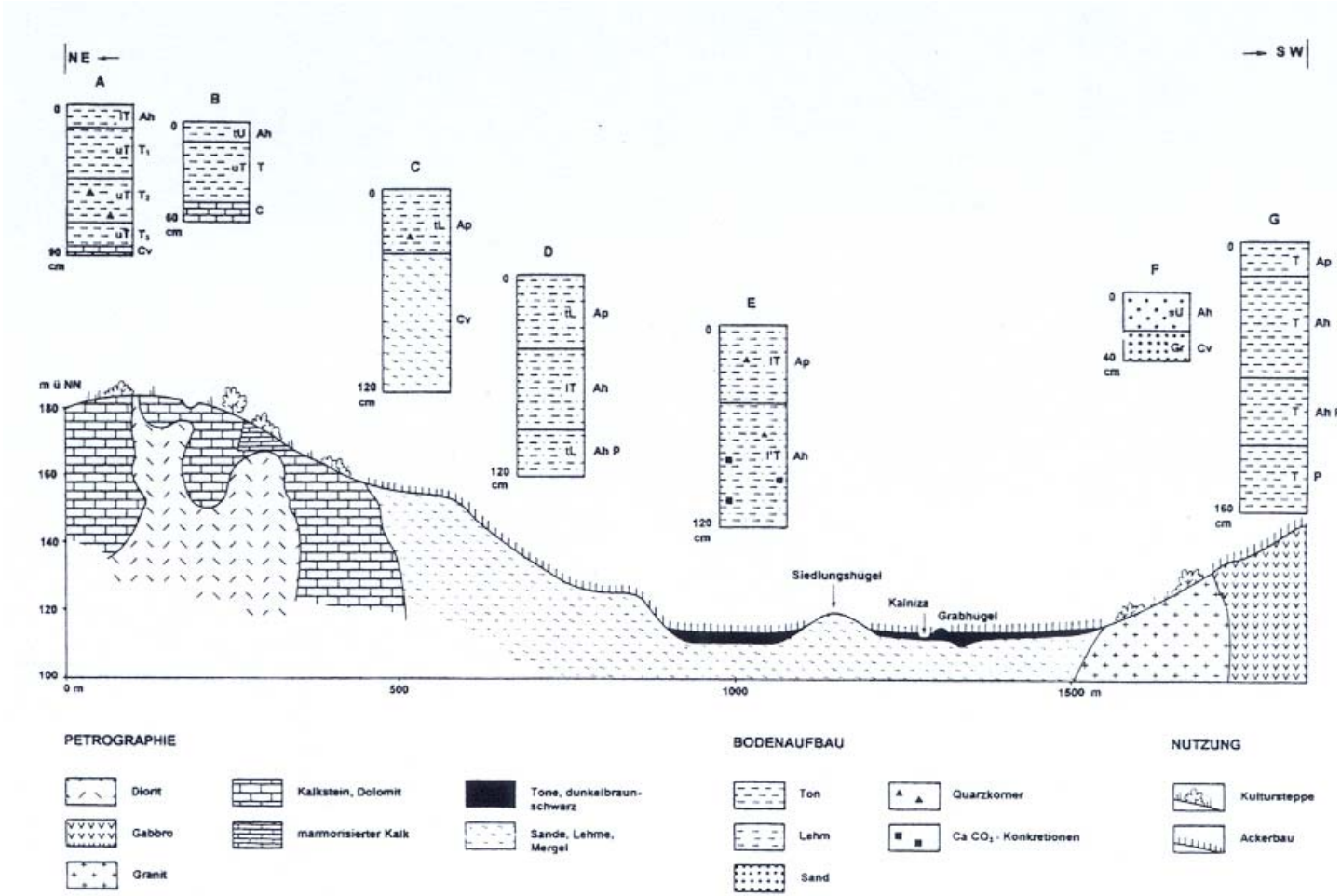


Fig. 4.2.3 Pedogenesis in Drama microregion;
Source: Kubiniok 1996

Key: Profile type A and B Ah - up to 2%; profile type C and F Ah - up to 2-5%, rAp less than 1%; profile type D and G Ap - 2-3%, AhP - 1%; profile type E Ap - 2%, Ah 1%

The most controversial subject concerns the nature and formation of the black earth. The easiest point to settle is the name of this type of soil. There is a confusion inherited from Bulgarian pedology concerning soil terminology of the chernozem type (Lichardus et al. 2001), since for a long time there was an overlap in uniting chernozem and smolnitsa in one common name – chernozem-smolnitsa (Fig. 4.2.4). Both types share the same mechanical content; they are dark black in colour and very fertile. Recently, however, they were recognized as different soil types, since they have a very different pedogenesis (Soil Atlas 1998, FAO).

Bulgarian chernozem soils are automorphic, e.g., they are formed on acidic loess sediments. They are of eolian origin and are formed after the end of the last Glacial, during the subsequent increase in temperature and decline in precipitation. Their distribution in Bulgaria does not extend South of the Stara Planina mountain range. Some loess sediments (clay and other deposits) are sparsely spread across South Bulgaria but chernozem development is not reported so far in this area (Kenderova pers. comm.).

Smolnitsa is a local, Balkan type of soil. They are distributed in Bulgaria, former Yugoslavia, Albania, Romania and Turkey. They are formed under a transitional continental climate with sub-tropical influence, mainly on Pliocene deposits and old Quaternary terraces. The first stage of their development is hydromorphic – Pliocene mantles with heavy mechanical content in conditions of flat relief. With continuing low water flow, these soils develop into wet meadow and marshy forms. This stage is followed by a period of dryness, after good surface drainage and under the influence of meadow-forest and forest-steppe vegetation. Smolnitsa are developed on different geological substrate from chernozem, as well as on the weathering products of granite and andesite. Recent investigations confirm that smolnitsa were formed under the influence of forest growth, as documented by leaching processes very close to forest conditions. Nevertheless, contemporary distribution of this soil lacks the presence of forests. In Bulgaria, smolnitsa soils are mainly distributed over the lowlands of the Upper Thracian plain, the Tundja district and the Burgas plain and represent cca. 5% of the total soil cover of the country (Georgiev in press).

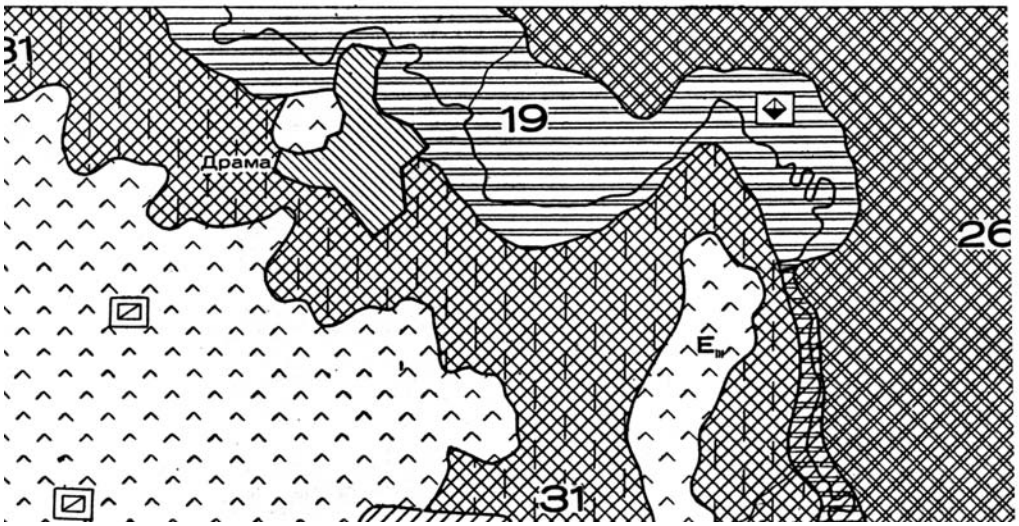
This relatively detailed description of the genesis and distribution of chernozem and smolnitsa is necessary in order to assess the claim for chernozem formation around 4000 BC (Lichardus et al. 2001). It was mentioned in the publication that the chernozem was of smolnitsa type (Lichardus et al. 2001), so it could be inferred that what was meant in fact was chernozem-smolnitsa. As has become apparent, 'chernozem-smolnitsa' is called 'smolnitsa' in contemporary pedological terminology. Whether or not smolnitsa was formed in Drama around 4000 BC is a difficult question to answer, given the present condition of the data. There is no evidence so far for the specific environmental conditions in this period (4000 BC) that might have favoured the genesis of smolnitsa.

There is one less likely opportunity for the development of chernozem - as a result of meadow-steppe vegetation influence that appeared after forest clearance (Georgiev in press; cf. Kruk 1980 for Southern Poland). The substantiation of such a hypothesis, however, requires specific target-oriented investigations that have not yet been accomplished in the Drama area.

4.2.4 Soil distribution in the Drama basin

One of the important results of pedological investigations in Bulgaria in the last century was soil mapping at different scales. Regional surveys, however, are extremely rare and, for the Drama area, the only available soil map suitable for microregional study is the 1:50,000-scale sheet of the Burgas district, produced in 1961 (Koinov et al. 1961) – reproduced here as Fig. 4.2.4. This early date explains the terminological confusion in naming 'smolnitsa' as 'chernozem-smolnitsa'. Recent investigation of soils in the Yambol district (regrettably without maps) confirm in general the earlier survey results, adding some new soil types and updating the terminology of soil classification (Baltakova 2001).

According to the soil map (Fig. 4.2.4), leached cinnomonic smolnitsa (chernozem-smolnitsa in the older terminology); typical smolnitsa (formerly 'chernozem-smolnitsa') and meadow-cinnomonic soils were distributed over the Drama basin, as well as some shallow soils on andesite rocks (Koinov et al. 1961).



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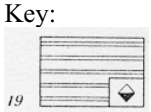
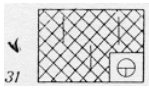


meadow-cinnomonic soil

smolnitsa



leached cinnomonic smolnitsa

shallow soils on andesite

Fig. 4.2.4 Soil distribution in the Drama basin, with updated pedological terminology; Source: Koinov et al. 1961

Smolnitsa soils in the Yambol district comprise a 45 to 60cm-thick humus horizon. Their content varies from heavy sandy clay to medium clay with not a very high percentage of humus (230 – 400 tonne per ha in 1m soil layer). They have the same adverse chemical and physical properties as smolnitsa in Maritsa Iztok (Baltakova 2001).

Leached cinnomonic forest soils develop in association with smolnitsa in the Yambol district. Both soil types share similar evolutionary transitions and their relict traces are still visible in soil profiles in the Elhovo and Thracian lowlands (Baltakova 2001). Due to lack of any more precise information, it might be presumed that the leached cinnomonic smolnitsa distribution shown on the map corresponds with leached cinnomonic forest soils in the recent study (Baltakova 2001). According to the latter, leached cinnomonic forest soils comprise a 20-60cm-thick humus horizon with a humus content in A1 horizon under forest from 2% to 17% and in the Ar horizon from 0.8% to 4.8%. Their hygroscopic capacity depends on their mechanical content but, in general, they suffer from a poor water/air regime (Baltakova 2001).
Meadow-cinnomonic soils share the same characteristics as the cinnomonic forest soils but have a thicker humus horizon, ranging from 40 to 80cm.

The unmapped (Koinov et al. 1961) alluvial-meadow soils are presumed to be spread along the river Kalnitsa. As expected, their distribution was attested on river terraces in the Yambol district (Baltakova 2001). They have a 10 to 70cm-thick humus horizon, below which are river mantles. Their clay content varies between 10 and 60% but lighter soils are prevalent. The humus content varies from 1% to 5%, for the ploughed areas between 1% and 2.5%. Alluvial-meadow soils are crumbly, with a good water/air regime and are not sticky (Baltakova 2001).

4.2.5 The impact of mining in Maritsa Iztok

The most significant long-term anthropogenic factor in the destruction of the landscape was the gradual de-forestation of the study region. Cleared areas were used for agriculture, leading to the widespread replacement of the natural vegetation by plant cultivation. Along with artificial manuring and irrigation, this caused changes in microclimate and especially in soil texture. Therefore, present soils in Maritsa Iztok differ from their virgin predecessors (Kirilova 1985).

These disturbances, however, were not believed to bring about huge environmental impacts since, in the early 20th century, these areas were mostly small-scale farm lands together with large uncultivated areas with both natural and introduced vegetation (Nam 1995).

There are two major activities that took place during coal exploitation – terrace-like excavation of land and the long-distance transportation of the spoil to enormous

spoil heaps. The dual destruction of landscape created both negative shapes – up to 150 m deep - and positive shapes– up to 50 m high. This was accompanied by large-scale infrastructure of special roads, equipment and buildings that have a secondary effect on the landscape.
An additional effect on the hydrology of the region concerns the "correction" of the rivers' beds and the numerous artificial lakes and water-tanks that were created for the outflow of the subsurface water. Soils from the exploited areas were stored for future re-cultivation! Pollution is still a problem in the region, despite the long-term experience of addressing the side-effects of mining. Removal of vegetation cores increases soil aridity, not only in the study region but also in the wider area of the Upper Thracian Plain. Last but not least is the almost completely changed native flora and fauna as a result of secondary migration from adjacent areas (Nam 1995).

Natural processes as denudation and erosion cannot follow their original trends in such a devastated landscape and often spill over into neighbouring areas. Radical shifts in the hydrological, gas, thermal and chemical regimes of geological formations could break down the gravity balance and lead to unsuspected changes in the landscape. This is, for instance, the case in the region near the village of Obrutchishte, where a flat zone of several hundred sq. m between two external spoil-heaps has turned into a lowland area (Kirilova 1985).

4.3. Climate and Vegetation according to modern and palaeo-botanical data

4.3.1.Modern data for Maritsa Iztok

Climate

According to the contemporary climatic classification in Bulgaria, Maritsa Iztok falls into the Upper Thracian sub-area of intermediate continental climate, with hot summers and relatively mild winters. Due to the paucity of sharp changes in relief and the low hypsometric fluctuations, its homogeneous climatic conditions are seen in the long-term temperature and rainfall measurements. The average January temperature is 0 - 1^0 C, with lower values towards the South East, in the foothills of the Sakar mountain. Roughly the same variability is seen in the mean July temperature that is cca. 24^0 C. The average monthly and annual temperature regime for the period 1916-1955 in Maritsa Iztok is given in Table 4.3.1 (Kirilova 1985).

The data from Table 4.3.2 show that the mean annual temperature is above 12^0 C, with a relatively high annual amplitude of – 24.1^0 C. This fact, along with the relatively high diurnal amplitudes – 8.2^0 C in December and up to 16.2^0 C in August – is evidence for some continentality in the temperature regime. Temperature variations as shown in rows 4 and 5 are due to the particularities of atmospheric circulation (Kirilova 1985). The number of days with temperatures higher than 10^0 C varies between 200 and 230 per year (Nam 1995).

Average annual rainfall values for the period from 1896 to 1945 fluctuate between 500-600 mm, which is below the mean annual rainfall for the rest of the country (Table 4.3.2). The summer maximum falls in June, which is typical for a continental climate. However, the secondary minimum rainfall in December that follows the August trough provides strong evidence for Mediterranean influence (Kirilova 1985).

Summer drought is shown in Fig. 4.3.1, when high temperatures accompany lower rainfall in July, August and September. The other two graphs with data from the Stara Zagora and Svilengrad meteorological stations are given for comparison. Mediterranean influence intensifies towards the Southeast part of Bulgaria (Svilengrad), it is not that strong in the middle of the Upper Thracian Plain (Stara Zagora), while the Maritsa Iztok study region lies in an intermediate position (Kirilova 1985).

	I	II	III	IV	V	VI	VII	VIII	IX	X	XI	XII	annual
St.Lubenova mahala1921-1955	0.1	2.1	6.4	12.1	16.9	21.5	24.2	23.8	19.7	13.8	8	2.4	12.6
Mean max.	4.2	7.5	13.1	19.5	21.1	29.1	32.2	32.3	27.8	21	13.6	6.3	
Mean min.	-4.3	-2.4	1.1	5.4	10.1	14.2	16.6	16.1	12.5	7.6	3.1	-1.9	
Absolute max	17.6	20.1	30	33.5	37.8	39.6	40.8	42.4	38.6	37.4	28	19.1	
Absolute min	-29.4	-26.1	-16.4	-5.3	0.3	4.8	7.5	8.2	1.1	-5.9	-14.7	-23.9	

Table 4.3.1 Average annual and month temperature for the period 1916-1955; Source: Kirilova 1985 after Climatic Year Book of NRB 1959

	I	II	III	IV	V	VI	VII	VIII	IX	X	XI	XII	Annual	Winter	Spring	Summer	autumn
Lubenova mahala	35	33	33	41	64	67	61	30	34	43	50	51	542	119	138	158	127
Radnevo	38	30	34	42	64	61	56	38	39	46	60	54	562	122	140	155	145
Calabovo	42	34	37	41	56	70	40	23	30	46	52	53	524	129	134	133	128
Glavan	52	42	51	48	48	71	41	29	32	45	62	66	587	160	147	141	139

Table 4.3.2 Average annual, season and month rainfall for the period 1896-1945;Source: Kirilova 1985 after Rainfall Yearbook of NRB 1962

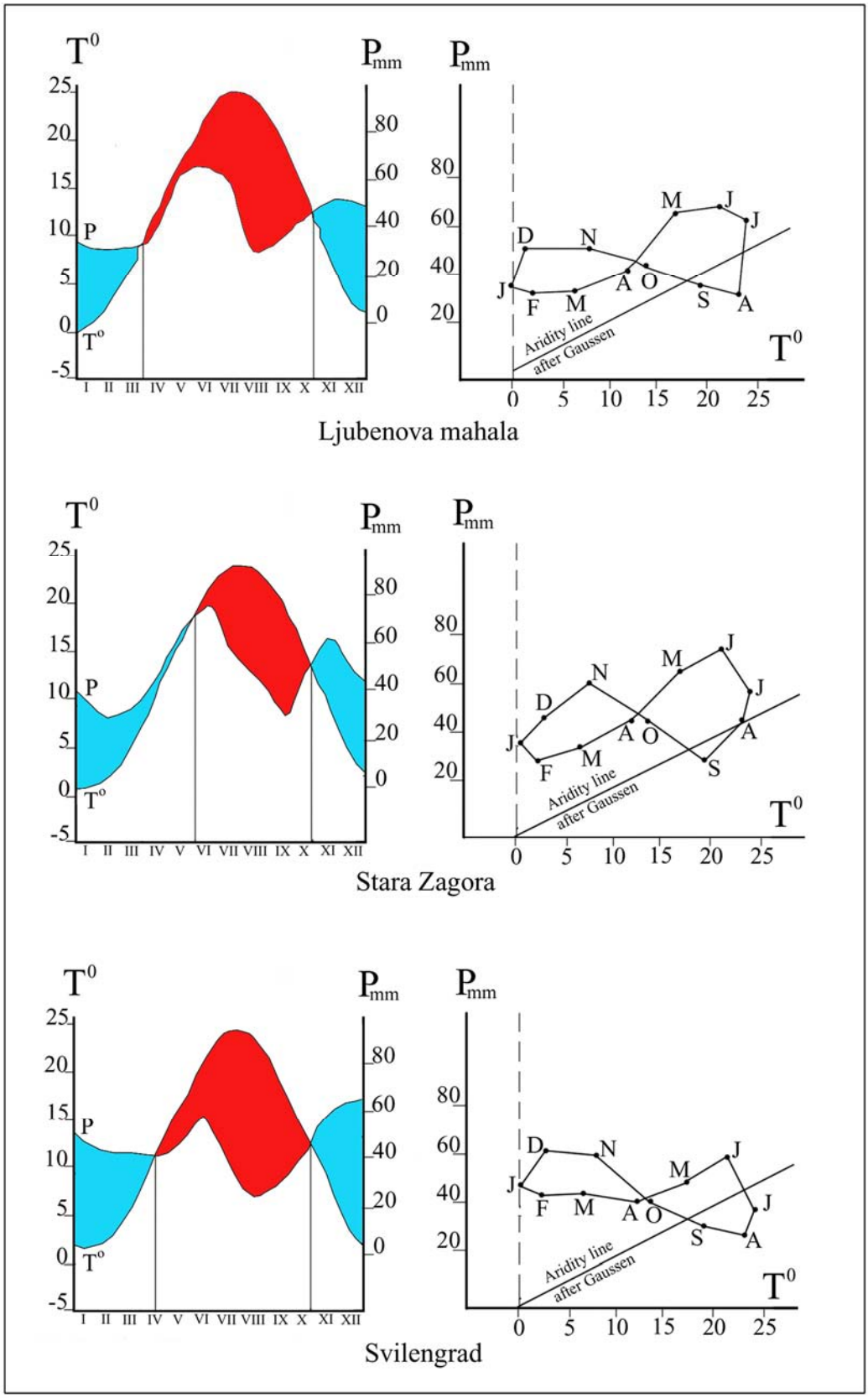


Fig. 4.3.1 Annual water balance for the Maritsa Iztok and neighbouring regions; Source: Kirilova 1985

Measurement of the duration of snow coverage at the Radnevo station shows an average of 63 days per year, starting on 23rd December and finishing on 2nd March. The mean thickness value of snow coverage is 10-12 cm but in general show great variability. Only 15% of the winters during the period 1931-1970 had stable snow coverage (Kirilova 1985).

As a general trend, the windiness of the region is equable. There are 29 - 31 days per month without strong winds (Nam 1995). Most common is the South wind, that dries the soil in the spring and the strong North wind, that is crucial for the ventilation of Maritsa Iztok power complex area. There are also sporadic Föhn activities.

Surface water

There are several reasons for the relatively low annual flow (0,5-2 l/s/km2) in Maritsa Iztok, that characterizes the region as one with little water supply. The maximum flow is in February, consisting of both rain and snow input. Winter flow exceeds spring flow because of the unstable snow coverage and the loss of spring rainwater through evaporation. Soil water flow is less then 20% of the mean flow value. Increasing cultivation with annual shifting crops and chemical manuring has led to substantial changes in soil texture and agricultural lands have little or no importance for water regulation. Low moistening, intensive evaporation and early exhaustion of the dynamic sub-soil water supplies result in a minimum water flow in August. Summer drought in this region is confirmed by the continuity and frequency of rivers which run dry. Every year, the Sokolitsa runs dry for a period of 75 - 100 days, while the Ovcharitsa runs dry once to three times every 10 years. The pattern of winter flow maximum reveals a strong Mediterranean climatic influence on outflow regimes (Kirilova 1985).

Vegetation

Contemporary geographical indices in Maritsa Iztok as described so far are completed by the distribution of xerophytic and mesoxerophytic vegetation within the study area. Natural vegetation has a limited distribution, represented mostly by relict deciduous Sub-Mediterranean forests of pure and mixed type. They mainly consist of forests of *Q. Pubescens* and *Carpinus orientalis* and lower stands of *Fraximus ornus* and *Juniperus*, with thorn and sumac in some places. The higher areas support central European species such as *Q. frainetto*, *Q. cerris*, *Q. sessiliflora Salisb* and *Ulmus minor* (Kirilova 1985).

Carpinus sp. and durmast are found in wetter places, while poplar, willow, elm, ash-tree and *Q. robur* grow on the floodplains. Bush associations are represented by thorn, sumac, briar and blackthorn. Artificial forests consist of *Pinus sp*., common locust and Canadian poplar, as well as a few natural species (Nam 1995). The herbaceous assemblage in the region includes meadow species such as *Festuca pratensis* and *Poa silvicola* and pasture species such as *Poa bulbosa*, *Festuca pseudovina* and *Andropogon ischaemum* (Kirilova 1985).

The steppe vegetation is not natural but the result of a continuous process of aridisation in the Maritsa Iztok area, which has led to an expansion in xerophytic cover. Secondary associations are widespread all over the study region. Intensive agriculture and inner re-allocation of natural species, as well as the introduction of new ones, have significantly changed the vegetation of the landscape (Nam 1995).

According to a recent study (Bondev 1991), the largest areas of change are the cultivated areas that replaced mixed oak forests comprising *Q. cerris*, *Querceta virgilianae* and often *Q. pedunculatiflora*. Smaller territories were once covered with mixed oak forests of *Q. cerris* and *Q. frainetto* or of *Q. Pubescens* and *Querceta virgilianae*. Smaller areas are covered by the agriculture lands that took over forests of *Ulmus campestris L.*, *Fraxinus sp*. and *Q. pedunculiflora*, *Andropogone ischaemi*, *Poaeta bulbosae*, *Chrysopogoneta grylli* and *Ephemereta sp*., accompanied by thorn bushes and jasmine, currently occupying common pasture areas (Fig. 4.3.2 – on CD). Bondev also suggests that, under undisturbed current climatic conditions, 95% of contemporary Bulgarian territory would be covered by forests (Bondev 1991).

Original vegetation is still represented by forests of *Q. cerris* and *Q. Pubescens* between the rivers Sokolitsa and Ovcharitsa and the forests of *Q. Pubescens* and *Querceta virgilianae* in the most Eastern parts of the study region, as well as the woods of *Q. frainetto* and *Carpinus orientalis* South of the river Sokolitsa. Along the valleys of the Sazliika, Ovcharitsa and in parts of the Sokolitsa, there are still some small areas of native species such as *Q. pedunculatiflora*, Q. robur, *Ulmus minor*and *Fraximus sp.*, together with communities of willow, poplar, alder and reeds in the lowest-lying places (Kirilova 1985).

Fauna

The current distribution of fauna is closely related to that of vegetation. Cultivation led to the spread of species that are few in variability but great in number of individuals. The distribution of native animals is considerably reduced and consists of 55% central European species and 25% Mediterranean ones. Among the former are *Gricetulus migraterius* (Grey hamster), *Arvicola terrestris* (water vole), *Phasianus colchicus* (pheasant), *Passer hispaniolensis* (Spanish sparrow), *Falco naumanni* (lesser kestrel) and *Hippolais olivetorum* (Olive-tree warbler). Mediterranean influence is found in the distribution of some reptile species, such as *Ophisauris apodus* (European glass lizard), *Gyrtodactylus cotschyi* (Kotschy's gecko), *Eryx jaculus* (Sand boa), *Typholos*

vernicularis (Worm snake), *Coluber najadum* (Dahl's whip snake) and *Elorphe quatuorlineata* (Four-lined snake). There are also species widespread across present Bulgaria, such as the hare, hedgehog, wild boar, mole, hamster, partridge, pink starling, owlet, thrush, etc (Kirilova 1985).

Land use

The modern industrialization of Maritsa Iztok did not completely destroy the agriculture of a region once known as the "granary" of the country. Between the devastated areas, on islands of undisturbed ground, one can surprisingly see strips of sunflower or maize. Within areas scheduled for destruction by mining, some relict agriculture is still practiced.

There is some data on land use in the area prior to industrialization, which concerns not only the study region but the whole county, that generally includes the modern Stara Zagora district.

In 1897, the statistical book of the Bulgarian Principality was published (Atanasov 1897). The part that deals with the study area shows that 147,647 persons were occupied with farming, viticulture, horticulture and forestry; 7,018 with stock or poultry raising, apiculture and sericulture and only 126 with hunting and fishing. In 1888, the total population of the area was 208,396, the ratio of urban/rural population was 1:4 and the mean distance between settlements was 5.27 km. The spatial distribution of land use comprises 200,000 ha of cornfields, gardens and melon-gardens; 9,930 ha of vineyards; 6,500 ha of meadows, 100,600 ha of original and secondary low woodlands; 324,870 ha of pasture, lakes, marshes, rivers and lands unsuitable for cultivation (Atanasov 1897).

The low percentage of the forests – just 4.3% - made some authors conclude that forest clearance of the area was progressive over a period of 1,500 years (Nam 1995). The Czech traveller and scholar K. Irechek gives some interesting information about the land-use pattern in the last decades of the 19th century in Bulgaria (Irechek 1899). According to his report, simple cultivation without manuring was a recent form of agriculture; it was only after the Liberation in 1878 that medium and small-scale farming replaced large farm enterprises. The species grown were wheat, rye, barley, oats, millet, spelt, maize, legumes, vegetables, melons, pumpkins, tobacco, anise, sesame, cotton, nuts, grapes and fruit-trees (Irechek 1899).

In the "Jubilee Book of the Bulgarian Village" (Gruev 1931), there are data on 6 villages within the current Maritsa Iztok area. The territories of two of them – Mednikarovo and Mudrets - are included in the current study (Table 4.3.3).

Village	Main subsistence	Crop types
Mednikarovo	agriculture	cereals, vegetables
Drianovo	agriculture	cereals
Mudrets	agriculture	tobacco
Pomoshtnik	agriculture	Rye, tobacco, vineyards
Glavan	agriculture, stock-breeding, sericulture	Rye, tobacco, vineyards
Tianevo	agriculture, stock-breeding	cereals, tobacco

Table 4.3.3 Maritsa Iztok subsistence in the beginning of the AD 20th century; Source: Nam 1995, after Gruev 1931

According to these data, agriculture prevails over stockbreeding. The most important species were different kinds of cereals, followed by tobacco and grapes with a small quantity of vegetables (Gruev 1931).

The relative continuity of land-use was confirmed by the pre-coal-exploitation investigations in the region. An early claim for land use conservation in Bulgaria (Botev and Kovachev 1934) was later supported for the area of Maritsa Iztok in particular (Nam 1995).

4.3.2 Modern data for the Drama basin

Climate

The climatic conditions in the Drama basin require special investigations, which are yet not forthcoming. According to the Bulgarian classification, the Drama microregion and its surroundings lie at the boundary of transitional continental and continental/Mediterranean climates (Jordanova and Donchev 1997).The study area formally belongs to a transitional continental zone but there is some strong evidence for Mediterranean influence (Table 4.3.4).

The closest meteorological stations to the Drama microregion are Yambol, in the heart of the Tundja lowland, and Elhovo, in the foothills of the Strandja mountain (Fig. 4.3.3 on CD). The Bulgarian part of this mountain, especially around Elhovo, is believed to display a continental/Mediterranean climate (Jordanova

and Donchev 1997). The high rainfall indices for November and December in Elhovo, though, are not a surprise and are indicators of Mediterranean influence (Table 4.3.4). Yambol is some 50km to the North of Elhovo and the Mediterranean influence is not so well documented. Drama lies between these two stations but closer to Elhovo (Fig. 4.3.3). Thus, some Mediterranean influence is not to be excluded, expressed mainly in its mild winters rather than its dry summers.

As Table 4.3.4 shows, there is a general trend towards higher annual rainfall in Elhovo, mainly due to increased autumn/winter rains. The summer maximum remains dominant but a November secondary maximum has become more substantial over the last 60 years. In Yambol, the overall quantity of rainfall has remained constant. There is a decreasing trend of the absolute value of June rains but they still remain the most intensive. The increase in spring rather than autumn rainfall is an indicator of continental climate.

The average annual temperature also shows an increasing trend (Table 4.3.5); as in Elhovo, it is half a degree higher than in Yambol. This mainly due to the slightly higher autumn/winter temperatures, that reveal mild winters under Mediterranean influence.

The complex interrelation between a number of factors (altitude, precipitation, temperature, cloudiness, drought, etc.) for Elhovo are given on CD (Fig. 4.3.3), which shows a pattern of hot, moderately dry summers and relatively mild winters.

Vegetation

The natural vegetation is still preserved in some areas within and around the Drama microgerion. This takes the form of forests of *Q. pubescentis Wild* and Virgilian oak. In the higher parts of the landscape, these forests are accompanied by *C.orientalis Mild* and Mediterranean elements such as *Acer monspessulanum*, *Juniperus* oxycedrus, *Jasminum fruticans*, etc. There are also some secondary species, such as *Phyllirea latifolia*, *Cistus incanus, Asparagus acutifolius* and so on (Fig. 4.3.4 on CD; Bondev 1991).

Much larger areas are, however, covered with secondary vegetation. Immediate near the village and along the river, farmland has replaced forests of field elm, field ash-tree and *Q. pedunculiflora Koch*. These moisture-loving species have now been replaced by vegetable, fruit and corn cultivation (Bondev 1991).

The largest agricultural areas have replaced forests of *Q.pubescentis Wild* and Virgilian oak. They are found on the cinnomonic forest soils on the basin slopes and low hills. The best tobacco is grown there, as well as some vineyards and cereals (Bondev 1991).

Very close to the contemporary village can be seen a development of xerothermic grass communities dominated by *Dichanticta ischaemi*, *Poaeta bulbosae*, *Poaeta concinnae, Chrysopogeneta grylli* and *Ephemereta*. This community usually replaces a very wide range of species, such as xerothermic forest species, secondary vegetation and shrubs (oak, hornbeam, thorn, red juniper), as well as some mesophytic forest formations, especially over eroded soils (Bondev 1991).

Natural forests of *Q. pubescentis Wild* and Virgilian oak are surrounded by shrubs of Christ thorn, mixed with jasmine combined with xerothermic communities replacing xerothermic forest communities of *Q. pubescentis Wild* and Virgilian oak and rarely replacing *Q. cerris* or other forests.

Land use

The area around the present village is typical rural agriculture land. The first and second terraces are covered by wheat, while, in the floodplain, garden species or weeds are dominant. Some slopes are also used for cultivation, especially for legumes, vineyards, maize and fruit-trees. The pattern of land use was totally destroyed by communist cooperative farming that is still recognizable in the bulk of uncultivated lands, now covered by weeds and grass. These areas, as well as gently and moderately sloping land, are used for pasture.

According to the local farmers, shifting cultivation is practiced, but the species and the rotational cycle have not been determined. The distribution of rankers is believed to supply good current grazing. A relatively recent development, dating to the Ottoman period, is hill-slope cultivation, which resulted in soil erosion and the deposition of colluvium containing Turkish sherds at the foot of the hills (Kubiniok 1996).

station	source	I	II	III	IV	V	VI	VII	VIII	IX	X	XI	XII	Spring	Summer	Autumn	Winter	annual
Elhovo	Jordanov[1] 1937/38	43	38	41	38	49	53	46	23	31	38	51	49	128	122	120	130	500
	Yearbook 1962	41	36	38	47	52	66	43	23	35	47	58	53	137	132	140	130	539
	Yearbook 1990	46	42	35	45	53	58	43	28	36	44	59	56	133	129	139	145	547
Yambol	Jordanov	37	36	39	40	54	74	49	32	37	43	54	46	133	155	134	119	541
	Yearbook 1962	36	34	37	43	55	75	52	41	35	42	52	50	135	168	129	120	552
	Yearbook 1990	37	35	29	46	63	66	52	35	35	40	54	49	138	153	129	121	541

Table 4.3.4 Average month, seasonal and annual rainfall in the Drama basin; Sources: Jordanov 1937/38, Rainfall Yearbook of NRB 1962, Climatic Yearbook 1990

station	source	I	II	III	IV	V	VI	VII	VIII	IX	X	XI	XII	Spring	Summer	Autumn	Winter	annual
Yambol	Jordanov 1937/38	1.4	-0.6	4.7	10.7	15.9	21.1	23	23	18.8	13.9	8.4	1.7	10.4	22.4	13.7	2.5	11.8
	Yearbook 1959	0.6	1.8	5.8	11.2	16.2	20.2	23.1	22.6	18.8	13.4	7.8	2.6	N/a	N/a	N/a	N/a	12
Elhovo	Yearbook 1959	1.2	2.2	6.5	11.7	16.8	20.7	23.5	22.8	19.2	14	8.7	2.4	N/a	N/a	N/a	N/a	12.5

Table 4.3.5 Average month, seasonal and annual temperature in Drama surrounding; Sources: Jordanov 1937/38, Climatic Year Book of NRB 1959

[1] The values are for 28 years' observations in Elhovo and 30 years in Yambol

4.3.3 Palynological evidence

Introduction

Palynological investigations are a major component of most contemporary interdisciplinary palaeo-environmental studies. Their main task is to reconstruct the past vegetation of the surveyed area and, on a broader scale, the overall vegetational development during the last 15,000 years. The assumption that certain floral taxa can tolerate certain weather conditions made pollen data a primary source for climatic reconstruction – another crucial factor in any environmental investigations. Although vegetational history is generally seen as response to macroclimate changes (Huntley 1990, Wright et al. 1993), nonetheless there are numerous examples suggesting that this oversimplified climate/vegetation interrelation is not uniform and simple (Magny 1982, Joos 1982, Beug 1982, Willis 1994; Magyari 2002).

The last phase of the present geo-chronological sequence – the Holocene - was subdivided into five climatic stages – Preboreal, Boreal, Atlantic, Sub-Boreal, Sub-Atlantic (Roberts 1998:29 citing Blytt-Sernander 1878 - 1906). As a primary source for vegetational history, pollen data justify these stages on a regional level and together with other environmental factors can support the existence of possible local climatic fluctuations (Iversen 1973, Harding 1982, Lamb 1982). In the best cases, broad interdisciplinary studies including lithological, geochemical, molluscan and pollen analyses, together with reliable absolute dating, can provide a good set of data, whose interrelated interpretation might be considered as an appropriate palaeo-environmental reconstruction (e.g., the Ystaad project: Berglund 1991). In most investigations, however, pollen analysis solely has been applied at a broader scale.

The very general explanatory framework of pollen data is that pollen rain is deposited in lakes and peat bogs, as evidence for the surrounding vegetation. Depending on the size of the basin, pollen rain is more or less useful for a broader picture of plant assemblages. If a basin is smaller than 5 ha, the pollen derives from local sources; if the basin is larger, pollen from up to 100 km may have been present (Willis et al. 1997, Willis et al. 1998). It is a key part of the interpretation of pollen data to assess the presence of taxa in the diagrams according to the type of pollen dispersal mechanism, their productivity, the degree of vegetational stability and the quality of pollen preservation.

In archaeology, palynological data has been mainly used for studying the important breakthroughs of cultivation and domestication. The phrases “Neolithic Transition” and “Forest Clearance” became synonymous for human control over natural vegetation and were (and still are) highly debated in their environmental, social, economic, technological and even linguistics aspects (Sherratt 1981, articles in Harding 1982, Ammerman and Cavalli-Sforza 1984, Dennell 1983, Barker 1985, Renfrew 1987, Zohary and Hopf 1988, Mallory 1989, Willis and Bennett 1994, Willis et al. 1998).

Information on the stages, intensity and diversity of the human impact on a particular environment derives from joint archaeo-botanical research. Since the early seventies, when the first interdisciplinary palaeo-environmental reconstructions started to appear, the inter-relations between human communities and vegetation has covered the whole spectrum of possible explanations – from the overwhelmingly cultural importance of the spread of agriculture (Sherratt 1981, Ammerman and Cavalli-Sforza 1984, Dennell 1983, Barker 1985, Renfrew 1987, Zohary and Hopf 1988, Mallory 1989) to the opposite extreme – the dominance of purely environmental factors in vegetational changes until cca. 2500 BC (Huntley 1990, Willis and Bennett 1994, Willis 1994, Magri 1996).

The present situation in Bulgaria – data and interpretation

Over the last 30 years, intensive palynological investigations were carried out in Bulgaria. The establishment of vegetational distribution and variability in the Pleistocene and Holocene was the main goal of the survey of different ecological zones - the Black Sea coast, the full altitudinal range of the Bulgarian mountains, as well as diverse lowlands. The vegetational cover during glacial periods, the presence of refugia for certain taxa and their subsequent migration were the earliest events for consideration in these studies (Filipovich 1981, Bozilova and Tonkov 1985, Filipova 2003 and many others). The further development and diversification of species was a second major task of Bulgarian palynological investigations (Bozilova and Tonkov 1984, Bozilova 1986). Last but not least was the discussion for the type and degree of the human impact on natural vegetational development (Bozilova 1986; Filipova - Marinova and Bozilova 1995).

Some marine palynological surveys of the Bulgarian Black Sea shelf (Komarov et al. 1979, Filipova et al. 1983; Filipova 2003), as well as litho-stratigraphic and bio-stratigfraphic schemes established in marine sedimentological investigations (Khrischev and Shopov 1978, Chepalga 1984), focused joint palaeo-environmental studies on their synchronization with past ecological events (e.g. marine transgressions, climatic changes and vegetational developments). Thus, a Holocene chronostratigraphy was established for Bulgaria (Bozilova 1982), following the generalization of results on a national or European level (van der Hammen and all 1971, Bottema 1974, Beug 1982, van Zeist and Bottema 1982, etc) and according to the climatic-stratigraphical scheme of Blytt-Sernander, the bio-stratigraphical

scheme of Firbas (Firbas 1949) and the chronostratigraphy of Mangerud.

Joint archaeological / palynological investigations, however, are still extremely rare[2]. Only two pollen cores have been taken from places with archaeological sites in the immediate vicinity – both in Northeast Bulgaria:- tell Durankulak and the settlements along the former shoreline of the Varna – Beloslav lakes,. More common are archaeo - botanical studies that resulted in a substantial body of cultivated taxa and weeds of cultivation recovered from archaeological sites (Hopf 1973, Behre 1977, Lisitsina and Filipovich 1980, Chakalova and Bozilova 1981, Yanushevish 1983, Popova 1995 (and references therein), Popova and Bozilova 1998).

The past vegetation cover in Bulgaria and its trends of change or stability has been considered in a broader Balkan and European context (Dennell 1983, Huntley and Birks 1983, Huntley 1990, Willis 1994, Willis and Bennett 1994). Most relevant for archaeological studies are Dennell's and Willis' opposing models for substantial (Dennell) and minimal (Willis) environmental impact of the earliest farmers in Southeast Europe. Botanists and archaeologists who have studied plant remains and subsistence strategies at the site level tend to support Dennell's hypothesis (Hopf 1973, Dennell 1975, Yanushevich 1983, Bozilova 1986, Popova 1995).

The basis for this opposition lies in the data and objectives of the different studies. On one side, there are archaeo-botanical studies searching for cultivated plant remains , with archaeologists trying to incorporate this evidence into a broader socio-economic context. Since the data comes from archaeological sites, in general, these data indicates selective human choice and hence, is not representative for overall vegetational cover. According to this view, the human/vegetation link is seen as the most important factor, which results in interpretations which underlined anthropocentric stress under conditions of, e.g., the adoption of agriculture, with the presence of certain taxa used as indicators of human activity, patterns of land use and crop rotation.

On the other hand, there are global palaeo-environmental studies, which aim to find common features among the scattered pieces of past ecological data and delineate general trends of environmental development. Crucial for these studies on the first place are the similarities and only then the differences that usually appeared at a regional level. The weak point in every general palaeo-environmental study is the regionality of the pollen data. It might be avoided by juxtaposing a series of pollen coring results deriving from one ecological area, as, for example, was done for the Rila Mountain (Bozilova 1977/78).

Both attempts to reconcile these two different approaches to palaeo-vegetational data (Bozilova 1986) and (Willis 1994) failed to provide a relevant palaeo-ecological reconstruction of Holocene Bulgaria according to all available archaeological and ecological data.

In the first case (Bozilova 1986), all the currently known plant remains were mechanically charted, without identification of any trends of human vegetation exploitation or giving any possible explanation of the recurring patterns of such exploitation and hence, reasons for specific cultural practices. It was inferred that there was an anthropogenic impact but no common, regional, chronological or any other human/vegetation interrelation patterns were established.

In the second study (Willis 1994), despite the main focus on human impact in the Neolithic, Copper Age and Bronze Age, evidence from only one Bulgarian archaeological site (Durankulak) is included. Therefore the researcher's claim for minimal human impact on the natural vegetation is hardly surprising. Willis' model will be discussed in some detail later on (see below p. 66-67) but here it is worth noting her other claims for Balkan vegetational history. The first one is for the expansion of Pistacia between 9000-8000 BP, the second concerns the change in forest dominance between 8000-7000 BP and the third postulates the increase of hornbeam, fir-tree and beech in the woodlands between 7500-5000 BP (Willis 1994). All of these results are important aspects of the Holocene vegetational succession in the Balkans.

The study regions and the problem of their palaeo-environmental reconstruction

An important part of palaeo-environmental reconstruction of the study regions, then, is the establishment of the past vegetational succession. The first difficulty in any attempts at such a reconstruction is the lack of pollen investigations within the study area[3]. The second difficulty appeared when data from the two nearest pollen-coring sites (each at a distance of 100 km from the study area) were overlaid in order to test the relevance of such a mechanical approach. The contradictions and similarities in the two pollen indices were so confusing that any interpretation based on this approach would be highly speculative. Therefore, in the situation of lack of any reliable pollen data, an alternative approach – indirect but less speculative – was applied to reconstruct the past vegetation of the study regions. The method called Principal Component Analysis (PCA) is one of the multi-variant data analyses that has been introduced in

[2] In 2002, sediment coring took place near the tells of Ezero, Galabovo and Djadovo: pollen analysis is currently in progress.

[3] The sediments from the 2002 core from the small marsh near Galabovo contain very low pollen concentrations (pers. comm., Prof. E. Bozhilova).

archaeology as a useful tool for identifying similarities and dissimilarities in complex data (Doran & Hodson 1975; for a PCA approach to Bulgarian palaeo-ecological data, see Ognjanova- Rumenova et al. 1998).

In general, PCA can identify similar interrelated characteristics – positive and negative – among a set of variables, which are different from the characteristics that define each variable. In the case of pollen data, two sites with apparently different vegetational developments, such as high mountain and lowland environments, for example, might appear to be very similar according to other axes. If the sites differ in their physical background and hence, simultaneous development of similar species, they may correspond in diachronic terms and present a consistent and similar balance of taxa, as in the apparent similarity of vegetation in the Preboreal/Boreal Mountain diagrams and those representing the Sub-boreal Plains[4]. So one has always take care with these analyses and make appropriate comparisons.

As with all statistical methods, PCA does not answer the question why; it is the task of the researcher to make sense of the results of the data analysis. Such an attempt is made for the reconstruction of palaeo-vegetation trends for certain areas in Bulgaria. The second stage is to extrapolate these palaeo-environmental results to the Maritsa Iztok and Drama microregions. A third outcome of the PCA analysis in this case is to test the validity of K.Willis's model for Balkan vegetational history.

The PCA application

PCA is a part of the SPSS package, in which primary data is stored in tabular form together with variables of the researcher's choice. Both tables and/or graphs permit the visualization of the results of the analysis. In the current study, 25 pollen samples were used. They derive from eight coring sites - Arkutino (Bozilova and Beug 1992), Durankulak, Kupena and Bezbog (European Pollen Database), Srebarna (Lazarova and Bozilova 2001), Varna (Bozilova and Filipova 1975), Sadovo (Filipovich and Stoyanova 1990) and Shabla (Filipova 1985) - deliberately chosen to represent the widest possible range of landscape forms (for further details see ATable 4.3.1).

Most of the samples have exact 14-C dates but, in 4 cases, dates are interpolated. Using OxCal v.2.18 (Stuiver & Reimer 1986), calibration of all BP dates back to 6800 was possible. There are at least two determinations from each coring site. Some sites contribute three, others four samples. The choice of variables fell upon 15 species recognised as the most representative and relevant for palaeo-environmental study. The value for the variables comprises the pollen percentage of the species in question as they are given in the publication of the core. Apart from the original pollen diagrams and text-based interpretations in the articles, the European Pollen Database on-line archive was used for 3 sites (Durankulak, Kupena and Bezbog). The types of geographical background, 14-C dates (BP and CAL BC) and taxa percentage of all the samples are given in ATables 4.3.1- 4.3.2. The full results of the PCA are presented in Appendix 1.

Interpretation of the PCA is based on only ATables 4.3.6 - 4.3.7 and AFigs. 4.3.2 – 4.3.4 and 4.3.6 - 4.3.7. ATable 4.3.7 shows that, after the extraction method (the initial stage of the PCA), six components appeared to be important for interrelations of this set of variables. The commonest is component 1, which accounts for 22.29% of the total variance; less important is component 2 (17.59% of total variance) and so on, in descending order. Usually not more than 3 components (the first ones) are used in PCA interpretations, since they have been considered as the most significant. The low analytical value of component 4 and downward is confirmed by this case study. In AFigs. 4.3.4 – 4.3.6 and 4.3.9, components 4-6 are shown to characterize extreme situations with no more then 2 samples for each variable; this is therefore not a trend but rather an exception. Extreme situations may be due to the type of the data or to collection and analysis of the primary data, or they may represent certain reality concerning a certain trend, a particular period or some other kind of specific development. For instance, component 5 opposes C. Betulus and Poaceae to Betula and Rumex. An attempt to name the component as a possible environmental one might be very misleading. Reference to AFig. 4.3.10 and ATable 4.3.2 shows that sorrel and birch have their highest distribution at the Srebarna coring site (Sr1 and Sr2), while, at Late Atlantic Shabla (Sh3), C. betulus reaches its peak development according to the other 24 samples. Thus, component 5 for this set of variables represents regional characteristics for three species and therefore is not relevant for the identification of general trends.

Components 1-3 account for 53.70% of the total variance and their characteristics are plotted on AFigs. 4.3.2 – 4.3.5. AFigs. 4.3.6 – 4.3.10 show the inter-relationships between samples and hence coring sites according to these three components. All graphs show that samples tend to cluster according to their place of origin and occasionally to their chronology. This reveals the regionalism of the South Balkan vegetational development and confirms the limitations of pollen data for general palaeo-environmental reconstruction.

Component 1 as displayed on AFig. 4.3.3 could be recognised as an altitudinal component, in which deciduous forests are opposed to coniferous woods. The distribution of samples confirms this opposition (AFig. 4.3.6); thus, high mountains (B1-3) have nothing in common with lowlands at the foothills of a relatively low mountain (A1-4). The Upper Thracian Plain sample (S1)

[4] For detailed description of the method see (Doran & Hodson 1975) and Norusis 2000.

is in the high mountain group because of the extremely high presence of Pinus. According to the publications, this is due to long-distance transport and the stability of Pinus pollen rather then a reflection of real ecological conditions. The last phase of the Varna lake settlement samples (V3) falls in the left side of the scatter because of a sharp decrease in oak, perhaps as a result of intensive forest clearance. The Early Atlantic Danube Plain (Sr1) and Late Atlantic North Black Sea Coast (Sh3: 4580 – 4450 CAL BC) samples used to share the same abundance of mixed oak woods as was found throughout the Late Atlantic-Late Sub-Boreal in the South Black Sea Coast (A1-4: 5210-5050 – 1515-1425 CAL BC). Almost half of the samples lies between the two extremes, indicating that sites are in intermediate locations in relation to the strong altitudinal opposition, as hilly landscapes or even lowlands but with a vegetational dominance of neither mixed oak forests nor pinewoods. A greater degree of taxa diversity, including herbaceous plants, is typical of these places.

Component 2 is harder to interpret, although, in general, it opposes a neutral to moist environment to cold weather conditions (cold nights or cold winters). Its accounts for 17% of total variance and it should be considered together with component 1 when their cumulative value becomes almost 40% (ATable 4.3.6). In AFig. 4.3.6, samples / coring sites are plotted according to component 1 (x-axis) and component 2 (y-axis). A grouping of samples means that sites share broadly similar environments defined by components one and two. The most prominent groupings are A2-A4; Sh1-2 –K2; V1-2-K1-S2 and Sr2-K4. For interpretative purposes, however, broader clusters are important, as well as trends in time at single coring sites according to both components 1 and 2. In this sense, cores from the two archaeological sites (V and D) seem to share similar environments in contrast to widespread current claims for different ecological conditions in these two parts of North Black Sea Coast (Bozilova 1986; Filipova- Marinova 2003). In the last phases of the sites (V3 and D3), the sparse stands of cold-tolerant species (D1, 2 and V1, 2) were replaced by Chenopod-dominated grassland in the case of Durankulak and oak clearance in the case of Varna. In chronological terms, D3 (1420 – 1300 CAL BC) falls at the beginning of the Sub-Atlantic – a period usually related to cooler weather conditions – that favours the expansion of cold-tolerant Chenopodiaceae. The last sample from Varna is from the end of the EBA and may indicate the results of EBA forest clearance. To make any conclusions about the palaeo-environment of Northeast Bulgaria, two more sites should be considered.

The first site – Shabla (Sh1-4) - suggests another refutation of contemporary interpretations of past ecological conditions. Durankulak and Shabla are about 30km apart each other and both are liman lakes. It has always been accepted that they share a similar vegetational history (Filipova 1984; Bozilova 1986). AFig. 4.3.6 is anything but confirmation of such a claim. The first two phases of Shabla are much earlier then the first sample from Durankulak but even the phases that are close in time (D1 (4230 – 4190 CAL BC) and Sh3 (4580 – 4450 CAL BC)) are widely separated on the scatter plot. The same pattern occurs with contemporary samples D3 and Sh4 (both 1420 – 1300 CAL BC). This may be interpreted either that there were wet areas around the lake that favoured the development of moisture-loving species or that weather conditions around Shabla, in general, were not as dry and cool as previously thought. A reference to the species distribution during these phases confirms a different distribution pattern in both areas, with the only similarities of relatively high Chenopods and the presence of Artemisia (ATable 4.3.2). The second site is Lake Srebarna in the Lower Danube Plain (Sr). The apparent drop of deciduous pollen values from Sr1 to Sr2 is due to a decrease of 50% in hornbeam values for both C. betulus and C. orientalis.

As was mentioned earlier, the samples show regional patterns of past vegetational development. A general trend in Northeast Bulgaria, however, is the decrease in deciduous taxa that had generally started by the middle of the 5th millennium CAL BC. In climatic terms, all the sites tend towards cold weather conditions in their last phases, which generally coincided with the beginning of the Sub-Boreal.

The regionality of vegetational development is not as closely connected to geographical latitude as one may expect, at least on the scale of Bulgaria and with this particular set of sites and variables. Samples from South Bulgaria tend to cluster with samples from North Bulgaria, following the same regional pattern and with the appearance of differences only at the level of diachronic trends.

As was mentioned earlier, the Arkutino marsh, near the Southern Black Sea Coast in the foothills of the Strandja Mountain (A1-4), reveals a long development of mixed oak woods, with fluctuations in the type and density of deciduous species (AFig. 4.3.6). Unfortunately, no diachronic information could be extracted from samples from the Sadovo bog, which is in the heart of the Upper Thracian Plain (S1 (2590-2460 CAL BC) and S2 (1515-1420 CAL BC)). Any interpretation would be biased because of the high percentage of pine in the first sample that, as already mentioned, is not natural for the region. The only valuable information for this bog comes from component 3 (AFigs. 4.3.4 and 4.3.7), which displays the highest densities of Aster-type and Poaceae among all the coring sites. Both bogs are neutral to component 2, which may be interpreted as a stable balance of moisture-neutral and cool/drought-tolerant species.

Before moving to the high mountain samples, it is important to interpret the contribution of component 3 to the overall palaeo-ecological reconstruction (AFigs. 4.3.4

and 4.3.8). Apart from Sadovo (see above p. 145), this component is highly informative about the high presence of grasses at Shabla (Sh1-4), that once again underlies the differences between Durankulak and Shabla. The lower part of the graph shows a higher presence of Corylus in the samples (V3, K2-4), while D3 reveals a dominance of Chenopod over Aster-type and Poaceae pollen.

The only high mountain sample in this set comes from Lake Bezbog in the Pirin Mountain, Southwest Bulgaria (B1-3: 5200 – 2280-2240 CAL BC). It shows a constant development of high-mountain species, with increasing conifers and Fagus towards the later periods (AFigs. 4.3.3 and 4.3.6).

The last coring site is Lake Kupena, located in the low mountain range of the West Rhodopes (K1-4). It was deliberately chosen to be the last in the interpretation, since it has a different pattern of development (AFig. 4.3.6). First of all, Kupena has a surprisingly stable cover of oak and hornbeam from K1 (9288 uncal BP) to K4 (1940-1770 CAL BC), found in no other coring site. The greatest change falls within component 2 and, to lesser extent, in component 3 (AFig. 4.3.8). There is a very intensive development of *Ulmus* and *Tilia* and some increase in Corylus. There are two possible explanations for this trend. The first one suggests competition between elm and lime with oak, that favours the development of *Quercus* throughout the whole sequence. The second hypothesis, that is accepted as more relevant in this particular case, assumes human impact. Together with *Tilia* and *Ulmus*, moisture-loving oak taxa were also developed. It has been argued that oak was widely used by the inhabitants of the Western Rhodopes foothills and high hollows (Chakalova & Bozilova 1981, Marinova 1999) since their appearance in the area. Corylus colonized cleared areas as secondary plants after deforestation or as pioneer taxa on open slopes (Bozilova 1977/78); these same areas were later occupied by elm, lime and oak. Oak clearance continued, while *Tilia* and *Ulmus* were not so intensively exploited by human communities, leading to a steady presence of oak and an increasing abundance of elm and lime. The decline in all of these species in the last phase (K4) could be either due to increased human exploitation or a climatic change to cooler conditions that allowed the development of competing, more cold-tolerant species such as *Fagus* and *Pinus*.

How do the PCA results relate to palaeo-environment of the study region?

The regionality of the Bulgarian pollen data has been underlined several times already. In the absence of a more precise source, however, pollen data from Kupena will be used as reference point for palaeo-environmental reconstruction of the study regions. There are two reasons to consider it as relevant. First, it is the only coring site of the set that shares a similar hilly environment with Maritsa Iztok and Drama, despite its higher altitude of 800 m in the Western Rhodopes. Secondly, successive vegetational processes during the last century in Maritsa Iztok and Drama regions show the presence of species generally present in the Kupena diagrams. Thus, accepting the limitations of the present data, the following hypothesis for the palaeo-environment of the study regions was suggested.

Mixed oak woods occupied the hilly brown forest soils areas. They were not very dense, bearing in mind the relative position of Kupena and Arkutino according to component 1, with the latter diagram indicative of denser oak woods than the former. Among the trees, an under-canopy of different shrubs and bushes would probably have developed. Since smolnitsa soils, with their wide distribution in the each micro-region, tolerate the development of woodland, deciduous trees also covered the low slopes, now under intensive cultivation. Along the rivers, moisture-loving species grew on alluvial meadow soils. *Ulmus minor*, *Tilia* and *Quercus* robur were maybe the first intensively cleared tree taxa in order to open up access to the alluvial soils, which were easy to cultivate. Grassy communities of Chenopods – species that were present in each diagram – must have also developed.

A difficult question to answer is the extent of Mediterranean influence in the Drama microregion. As mentioned earlier (see above, p. 58-59), the area has a strong Mediterranean climatic influence that is confirmed by the contemporary presence of some Mediterranean vegetational elements (Bondev 1991). If we assume that the average annual temperature during the Atlantic was 3-4^0 higher than nowadays, an even more Mediterranean – like environment could have been prevalent in the Drama microregion. The cooler weather during the later periods – especially the Sub-Atlantic - diminished the Mediterranean elements in the Drama environment, gradually leading to the present sporadic evidence of Mediterranean influence.

How do the PCA results relate to contemporary models of Balkan vegetational history?

According to Bulgarian palynologists, the vegetational succession of the last 15,000 years in Bulgaria can be summarised in three general points (Bozilova 1986):

(1) in the period 13,000 – 8,000 uncal BC, the lowlands and foothills of Eastern and Southwest Bulgaria were covered mainly by xerothermal grass communities. There was no clear forest boundary and the quantity of deciduous and coniferous species fluctuated according to stadial and interstadial conditions. The existence of refugia claimed for other areas of the Balkans (der Hammen et al. 1971, Bottema 1974) has been confirmed for the Bulgarian uplands as well (Bozilova 1986). The current PCA does not deal with such early periods but

general observations made during the study do not contradict this vegetational development.

(2) local environmental factors such as climate, topology, edaphical conditions and the distance of refugia caused several different diachronic trends in forest development during the Holocene (Bozilova 1986). An important conclusion is that coniferous vegetation in the low mountains retreated after the expansion of the beech 2,500 years ago. In contrast, the high mountains show an intensive development of different coniferous species during the last 3,000 years. At the beginning of the Holocene, the low mountains were occupied by xeromesophyllic oak and pine forests, while, during the climatic optimum, fir-tree forests were dominant (Bozilova 1986). Local trends of vegetational development were confirmed by the present study, as well as the competition of beech with other species in the low mountains and its stable position in the high mountains (AFig. 4.3.5).

(3) three trends in vegetational spread and sequence along the Black Sea coast were established. Varna Lake and Arkutino bog are believed to represent a short dynamic period at the beginning of the Holocene, with a rapid replacement of grass communities by woodland. This period was followed by a long-lasting, balanced mesoxerophyllic oak and hornbeam forests (Bozilova 1986). Since the earliest date for Varna is from the Eneolithic (5th millennium CAL BC), it is difficult to justify the first part of this conclusion. The second half, however, is not confirmed here. As mentioned above (see p.143), only Srebarna and Shabla share to some extent the diversity and density of the mixed oak forests of Arkutino. There were woodlands around Varna but they were far from abundant on the South Black Sea coast (AFig. 4.3.6)

Similar environments have also been claimed also for Durankulak and Shabla lakes. Steppe xerothermal grass communities are considered as primary and, shortly after 5500 uncal BC, some xeromesophyllic deciduous species developed there (Bozilova 1986). The differences in the vegetational histories of Durankulak and Shabla have already been argued (see p. 64-65). The expansion of deciduous species in Shabla happened between 4900 and 4500 CAL BC, while, in Durankulak, woodland was always less dense than at contemporary Shabla (AFig. 4.3.6).

The last claim for Black Sea coastal vegetation for the formation of longoz (hornbeam and rhododendron forests) forests around the mouths of the rivers only in the last 3,000 years cannot be justified due to the chronological and territorial scope of the current study.

The final task of this botanical section is to assess K. Willis's model for the vegetational history of the Balkans (Willis 1994). The principal aim of such a model is to identify long-term and widespread processes, whose main weaknesses are subjectivity and selectivity. While these shortcomings were more or less successfully overcome in other studies of global vegetational trends (Huntley 1990), Willis' model seems to suffer from selectivity in site choice (problems with data source) and subjectivity in the method of investigation.

According to the PCA results, some general observations concerning Willis' four main claims will be given. Detailed objections to some "facts" in Bulgarian data are presented in ATable 4.3.10.

Since the current data set contains just 3 samples from the period 7000-5000 uncal BC, which is the subject of Willis' first two claims, additional observations made during the process of this research will be used to make two general points.

First, Pistacia pollen is not present in the diagrams either between 7000-6000 uncal BC or later. Small stands of this species might have been present in Bulgaria but there is no palynological evidence for its existence, even in areas with Mediterranean influence.

Secondly, the suggested "change in forest dominance between 6000-5000 uncal BC", especially concerning Corylus (Willis 1994 : 781), is not supported by the Bulgarian data. As shown by component 3, with Corylus as one of its characteristics, only one out of all the eight sites is sensitive to Corylus development, particularly after 4950 CAL BC (ATable 4.3.1, AFigs. 4.3.4 and 4.3.8). The claim for "dominance change" is a strong one but not one that can be supported. Instead, data from Bulgaria would rather suggest diversification of tree taxa in this period, with oak dominant in the lowlands and pine and birch in the uplands.

The third vegetational change broadly defined as "an increase of C. orientalis/Ostrya, Abies, C. betulus and Fagus in the woodlands between 6400-3900 CAL BC" appears to be based largely on speculation. As AFigs. 4.3.3 – 4.3.5 show, while hornbeam and beech are not inversely related, they did not develop together. Their different vegetational history is confirmed by component 6, which identifies Fagus on its own as an important variable, accounting for 6% of the total variance (AFig. 4.3.5). AFig. 4.3.10 demonstrates a clear increase in beech in only 3 cases (Sr, K, B), all of them however, after 3900 CAL BC. Abies is not among the associated variables but, as argued elsewhere (Bozilova 1986), it shows similarities to the Fagus development as one of its main competitors. The claim for a general increase in hornbeam can be accepted only on a regional level, since component 1 shows only two sites (A and Sh) with an increase in Carpinus levels in the period 6400 – 3900 CAL BC (AFig. 4.3.6).

The last of Willis' claims will be considered in a little more detail – her claim that anthropogenic disturbance did not start earlier then 3300 CAL BC. This date develops Willis' previous hypothesis for 5000 CAL BC as a possible beginning for agricultural impact upon the Balkan landscape (Willis and Bennett 1994). While little could be said against the arguments for post-3300 human disturbance in terms of loss of forest cover, it is doubtful that this activity did not appear before 3300 CAL BC. As the cases of Kupena and Shabla demonstrate, human deforestation started at the beginning of the 5th millennium CAL BC. The oak decline at the Varna sites and the remarkable continuity in oak frequencies at Kupena suggests selective tree-cropping, as confirmed by archaeo-botanical evidence from the Varna lake settlements and the Western Rhodopes (Bozilova and Filipova 1975, Chakalova and Bozilova 1981, Marinova 1999).

Whether or not cultivation of plants did or did not affect the surrounding landscape is very hard to generalise for the whole country from the evidence from just one site (the site of Durankulak for Willis). An appropriate approach to this problem is the correlation between archaeo- botanical results from specific archaeological sites and pollen analysis from a basin in the immediate vicinity of the same site that will provide a full picture of natural vegetation sequence prior to and contemporary with human occupation, together with details of the cultivation of certain species and its effect on the surrounding environment. This, I believe, will provide enough evidence to push back the boundary of visible human impact much earlier than 3300 CAL BC.

4.3.4 Other palaeo-environmental sources

There are a few more data sources indirectly related to the past environment of the study regions.
About 20 km South of the Maritsa Iztok area, an Early Chalcolithic settlement near the village of Luda reka was investigated. Pollen samples from archaeological features – a pit and a trench – were taken there. Leaving behind the controversial sampling technique, the results are worth mentioning. Deciduous species such as oak, elm, ordinary and oriental hornbeam, hazel and cornell trees were growing there during the Early Copper Age. Fagus and Salix were also present, as were the herbaceous species Artemisia, Chenopodiaceae, Rumex, Plantago lanceolata and Polygonum aviculare (Lazarova and Stefanova 1997).

While working on other studies, three historians - Irechek, Casson and Venedikov and a Bulgarian economist - Gruev, have provided some interesting environmental information for the historical past of the three study regions.

The Czech scholar and traveller K. Irechek, citing Medieval sources, describes the area around present-day Stara Zagora as very rich, with an abundance of wheat, barley, rye, wine (resp. vineyards), flocks and herds (Irechek 1899).

In the early decades of the 20th century, the Classical scholar Stanley Casson made several research trips to Southeast Europe. In 1925, he published a book on Macedonia, Thrace and Illyria, based on classical sources and his own observations (reprinted as Casson 1968). Some of the information concerning natural resources might, again very carefully, be used for retrospective analysis of the past environment.

In this book, Macedonia is mentioned as a supplier of timber to the Greek world, while Thrace[5] is described as its granary. Casson suggested that the "enclosed plains of Macedonia" were less suitable for wheat cultivation than the "wider and more open plains of the Nestos and Hebros[6] and the downland of eastern Thrace". The high soil fertility of these areas was evidenced by Pliny's mention of the Hebros valley as producing corn that was reaped in the third or the second month after sowing. An interesting parallel is made with England, where the usual Thracian crop of ten times the amount sown, is achievable "after heavy manuring and much labour on the soil" (Casson 1968).

According to Casson, a great part of the tobacco-growing areas that he has seen during his trips have replaced ancient vineyards. Casson refers to a 17th century traveller who admired the quality of Maronean wine (Casson 1968).

This intriguing but fairly general information gives a general picture of the South Bulgaria landscape in the late prehistoric (LBA) and in early historic times. During the period before the first historical documents, there was a gradual expansion of wheat cultivation in the Maritsa plain. Whether some forest clearance has taken place in order to expand the cultivation area remains so far an open question. The timber trade did not, however, stimulate intensive deforestation. Vineyards most probably occupied hill-slopes and less favourable areas.
The Maritsa Iztok study area is in the Maritsa basin catchment on the one hand and at the edge of the low foothills of the Sakar Mountain, on the other. One may presume that the increase in wheat cultivation led to some forest clearance. Bare spots on the rolling hills that are in abundance here might have been occupied by small vineyards.

Venedikov (1981) wrote a monograph about agriculture in Bulgaria according to ancient sources. He does not contradict Casson's observations and enlarges the scope

[5] There is different understanding of Thrace as area and population in most of the ancient authors in comparison with an AD 20th century reading. However, in many of the modern interpretations, the study area belongs to ancient Thrace.
[6] Hebros is the classical name for the river Maritsa

of evidence for the environment of the Classical period (Venedikov 1981). Several authors including Herodotus, Appian and Thucydides mention "dense forests" spread over Strandja, Sakar , the Rhodopes and Stara Planina mountains. The word "venerable" used by Venedikov when citing Herodotus may let us conclude that natural vegetation (in this case mixed oak forests) was preserved to a great extent in the mountain areas during the Early Classical period. Nonetheless, wood was widely used as a building and heating material (Venedikov 1981). An interesting aspect of coniferous exploitation was tar production. Theophrastus gives us information about its production in Thrace in the 4th-3rd centuries BC. Tar can be extracted only from pine and it is believed to be crucial for protection from damp (structural beams and uprights, boat timbers etc.) and as a grease (Venedikov 1981).

These ancient sources of information are important in two respects. First, there is an implication of possible pine exploitation in the study regions and, secondly, a trade or exchange network probably existed with the high mountain regions. Coniferous exploitation in later prehistory has been confirmed for Neolithic tell Rakitovo, at 800 masl in the Rhodopes (Bozilova and Chakalova 1981).

Another crucial piece of information coming from Aristotle concerns the use of coal that derives not from mining but from river banks and beds (Venedikov 1981). These data reinforce the hypothesis for possible prehistoric lignite exploitation in Maritsa Iztok, since coal is still visible in the Sokolitsa river bed and it is claimed that pieces of coal were deposited on the Galabovo tell (Popova 2001).

Several years after Casson's book, the "Jubilee yearbook of the Bulgarian village" was published (Gruev 1931). There, one chapter is dedicated to the forests and their devastating destruction. However, the article consists of some curious information that might be of some relevance to the current study. The author describes a picture of vigorous life in the mountain and semi-mountain villages and their surroundings as they appeared in 1930. On the denuded hills around the village, the slightest rainfall caused gullies that spread mud and gravel over the fields, gardens and meadows. Beyond these deforested hills, there were low woodlands with single-species areas of oak, beech or elm. In the most remote surroundings of the villages lay the undisturbed forests (Gruev 1931).

All the three microregions are on the edge of a semi-mountain environment. It is possible that such a pattern of concentric land use zonation may have been found there until recently and on a much smaller scale in later prehistory. The areas closest to the settlements were gradually cleared and most probably cultivated. Beyond the agricultural lands were the pasture areas which may have included sparse woodland. The last land use category comprised dense forests – the source of timber for heating and building materials.

The final palaeo-geographical data that concerns the Drama microregion are the results of inter-disciplinary investigations of the German expedition. According to the results of the survey of the physical environment, few changes have happened since the earliest occupation of the region. The first Neolithic settlement occurred on a terrace of the steep bank of the river Kalnitsa, which is now covered by meadow clays and colluvium. Site abandonment was most probably caused by river overflow, that was followed by millennia of sedimentation, leading to the formation of the current course of the Kalnitsa. The Copper and Bronze Age multilayer settlement known as tell Mezdumekia was formed by a low, even hill overlain by 1.5 m of cultural deposits. The Western part of the hill was formed by an earlier steep bank of the Kalnitsa, which was covered by sediments during or after the site occupation (Kubiniok 1996). The first dwelling on the tell Mezdumekia was founded on a naturally defended place, since the hill was even steeper than the adjacent areas than it is today and was surrounded on three sides by the Kalnitsa and its small (un-named) Northern tributary (Lichardus et al. 2001).

Small-scale geomorphologic investigation in Drama microregion was made within the current fieldwork study. Sediment samples were taken from the locality "Ortabozaluk" - 1.5 km North of the present village and 2.5 km Northeast of the tell Mezdumekia. Three climatic phases were recognized for the Holocene in the Drama microregion. The first period is characterized by a mild and warm climate and the slope where the sample was taken from was well-drained, most probably indicating active diluvial wash. The subsequent cooling of the climate was inferred from the sample's characteristic signs of activation of the sedimentation process. More intensive rainfall brought more water, which transported a heavier gravel fraction. It was inferred that this was a process of active gully erosion. The last phase of climatic conditions, according to the content of the third sample, was wet but warm. Formation of the uppermost layer was influenced by pedogenesis and aeolic processes. The high percentage of clay in it indicates long-lasting, mainly chemical weathering (Kenderova et al. n.d.). Unfortunately, these climatic phases are as yet undated. However, the general conclusion is for lack of any drastic changes in Drama microregion relief during the Holocene.

Summary

The differences between the present environment and the palaeo-environment in the three study regions lie mainly in the degree of forest cover, which was much denser in later prehistory. These are areas with deciduous forests,

in which the Drama microregion contains more prominent evidence for Mediterranean presence. The PCA of dated pollen assemblages casts doubt on some of the "accepted" tenets of Bulgarian vegetational history. Anthropogenic impacts on the prehistoric environment by deforestation and cultivation started earlier than has hitherto been claimed but these impacts had no devastating long-term effects and did not cause severe erosion; on the contrary, sustained, successful agro-pastoral strategies continued from the Neolithic up to the modern farming of the 20th century. The soil distribution in the three study regions is similar. I maintain that there was no post-Neolithic chernozem formation in the Drama microregion but rather this soil was a pre-Neolithic smolnitsa. Climatic changes generally followed the established sequence of warmer and drier periods during the Atlantic period, succeeded by cooler and wetter periods during the Sub-Boreal.

The main change in the physical environment was the devastating open-cast mining in the Maritsa Iztok study area, that has dramatically changed the rural environment for ever.

Chapter Five - The Sokolitsa Microregion

In this chapter, the sites and monuments located in the Sokolitsa valley are discussed in turn as regards the general information about their excavation, the state of publication, the site contexts and their material culture and chronology and any remains of plants or animals, as well as a GIS analysis of their location, visibility, route network and site territory. The chapter starts with tell Galabovo, which is the Westernmost site in the Maritsa Iztok study area (Fig. 5.1.1). The presentation sequence of the sites is from West to East. An overall synthesis of the landscape, material culture and society is deferred to Chapter 8. Here, the dates of settlement occupations and burials are tabulated by site for Maritsa Iztok study area (Table 5.1.1).

5.1 Tell Galabovo

5.1.1. General information and earlier studies

Tell Galabovo has been investigated for four archaeological seasons, as part of the long-term research scheme of the Maritsa Iztok Expedition. The Western periphery of the tell was heavily damaged prior to the excavations by road construction, that removed a substantial part of the archaeological deposits. In addition, two channels for electric cables have destroyed the upper part of the tell. The nearby Briquette Factory produces coal dust as industrial waste that has coated the tell with a thick layer of hard, black, carbonaceous deposit.

The site was excavated by stratigraphic trenches and a network of sondages at the top of the tell. The trenches are oriented North-South along number 4 of the total 5 x 5 grid of the excavations. The central profiles follow the four cardinal points and are along gridline L7. The sondages in the upper and South West part of the tell started in squares O5-O7 and B4/C4 and were subsequently enlarged in accordance with the contexts discovered, the aims of the investigation and the current financial status of the Expedition (AFig. 5.1.1). The total excavated area of some of the occupational levels is given in table 5.1.2.

So far, fourteen building horizons have been dated to the Bronze Age[1] and three horizons to the Late Copper Age (AFig. 5.1.2). Sherds from the Late Neolithic and very final Copper Age were found in a disturbed stratigraphic context. Settlement occupations from the Iron Age, Roman and Medieval times were also documented on the tell. The current height of the tell is no more than 7m and the surviving dimensions of its base measure 125m North-South and 100m East-West.

BA horizons	Horizontally investigated area
VIII	100m^2
IX	150m^2
X	175m^2
XI	600m^2
XII	500m^2
XIII	650m^2
XIV	75m^2

Table 5.1.2 Excavated area of the BA horizons of tell Galabovo

Palaeo-botanical and archaeo-zoological studies have been made, as well as some lithic and petrological analyses (Popova 1991, Ribarov n.d., Gatsov n.d).

The results of the excavations and some major archaeological interpretations of the Galabovo data were published in a series of articles and monographs (Panayotov et al. 1991, Leshtakov 1993, 1995, 1996, Leshtakov et al. 2001, Leštakov 1993, 2000).

Archaeological evidence

Before turning to the occupational sequence of the tell, an important point should be mentioned. The main research priority in Galabovo investigations was the vertical stratigraphy of the tell. Special attention was paid to the horizontal stratigraphy and plans in the publications of only some of the Late Chalcolithic and MBA layers (X-XIV). The limited excavation area and grid-oriented documentation impedes the horizontal correlation of the features. Horizontal juxtaposition of archaeological features for each subsequent layer has not been undertaken, apart from in the above-mentioned Late Chalcolithic and MBA publications (Panayotov et al. 1991, Leštakov 1993, 2000). The correlations presented in the following pages are result of my own work that combines museum study, critical reviews of published material and personal communications with the excavators.

Copper Age

The three building horizons from the Chalcolithic were claimed on the basis of identified dwelling floors, usually made of beaten clay. The excavated area is 50 m^2 in the

[1] During the first three working seasons 13 building horizons have been identified. In 1995 the coal dust layer was removed and one or two more horizons have been observed. Since the presence of the last 15th horizon has not been confirmed, the total number of the Bronze Age building horizons is accepted to be 14.

SITE NAME	SITE TYPE	METHOD	PERIOD
Klisselika	tell	sondage	Karanovo I
Mednikarovo	tell	sondage	Karanovo II
Klisselika	tell	sondage	Karanovo II?
Klisselika	tell	sondage	Karanovo III?
Mednikarovo	tell	sondage	Karanovo III-IV
Obruchishte	flat site	sondage	Karanovo III-IV
Klisselika	tell	sondage	Karanovo IV
Barrow Four	barrow	pottery in the mound	Karanovo IV
Ovcharitsa II	flat site	sondage	Karanovo IV
Klisselika	tell	sondage	Karanovo V
Iskritsa	flat site	sondage	Karanovo V
Gudgova mogila	tell	sondage	Karanovo V?
Barrow Four	barrow	pottery in the mound	Karanovo V-VI
Polski Gradets	tell	sondage	Karanovo VI
Gudgova mogila	tell	sondage	Karanovo VI
Iskritsa	flat site	sondage	Karanovo VI
Galabovo	tell	excavation	Karanovo VI
Ovcharitsa II	enclosure	excavations	EBA I
Barrow Four	barrow/graves	excavations	EBA I
Goliamata mogila	barrow/26 graves	excavations	EBA I
Malkata mogila	barrow/grave 6	excavations	EBA I
Gonova mogila	barrow/grave 1	excavations	EBA I
Gonova mogila	barrow/grave2	excavations	EBA I - later than above
Kamenna mogila	barrow/grave 1,2	excavations	EBA I
Tcherniova mogila	barrow/graves 6,4	excavations	EBA I
Tcherniova mogila	barrow/grave 5	excavations	EBA I - later than above
Manchova mogila	barrow/graves 12-13	excavations	EBA I
Kurdova mogila	barrow/grave6 -collective	excavations	EBA I
Taniokoleva mogila	barrow/grave 9	excavations	EBA I - Ezero pottery
Taniokoleva mogila	barrow/grave 6	excavations	EBA I - later than above
Aldinova mogila	barrow/graves 1 and 2	excavations	EBA I
Atanasivanova mogila	barrow/graves	excavations	EBA I?
Mednikarovo-Iskritsa	barrow1/graves	excavations	EBA II
Mednikarovo-Iskritsa	barrow2/graves	excavations	EBA II
Mednikarovo-Iskritsa	barrow3/graves	excavations	EBA II
Mednikarovo-Iskritsa	barrow4/graves	excavations	EBA II
Gudgova mogila	tell	sondage	EBA II and III
Polski Gradets	tell	sondage	EBA II
Kurdova mogila	barrow/grave 2	excavations	EBA II - later than grave6
Goliama Detelina	flat site	sondage	EBA II
Tcherniova mogila	barrow/graves 1,2	excavations	EBA II
Galabovo	tell	excavations	EBA II or III?
Manchova mogila	barrow/graves 6,9,10,11	excavations	EBA II or III?
Goliamata mogila	barrow/5 graves	excavations	EBA II or III?
Kurdova mogila	barrow/graves 3, 4	excavations	EBA III
Ovcharitsa II	enclosure	excavations	EBA II
Gonova mogila	barrow/grave 3	excavations	EBA II or III?
Barrow Four	barrow/grave 2	excavations	EBA III
Goliamata mogila	barrow/ 1 grave	excavations	EBA III
Polski Gradets	pit site	excavations	EBA III
Galabovo	tell	excavations	MBA
Ovcharitsa I	flat site	excavations	LBA
Malkata mogila	barrow/graves 1-5	excavations	LBA
Goliamata mogila	barrow/4 graves	excavations	LBA
Manchova mogila	barrow/graves 1-5	excavations	LBA
Karaivanovi mogili	barrow 3	excavations	LBA
Polski Gradets	graves	excavations	LBA

Horizon/ square	Type	Pithos	Ovens/ hearths	Inventory	Traces of burning	Comments
I horizon/C4	Part of a house (AFig. 5.1.3c)	No	An oven and feature for keeping the warm air	2 whole and 4 fragmented vessels, a billet stone hammer-axe, a grinding stone, a stone adze, 4 flint tools. In one of the whole vessels there were 2 flint tools and some flint flakes considered as a production waste	layer of burnt house rubble, ash and charcoal	
II horizon/	Part of a house			many pottery sherds, animal bones, four whole vessels, a collective find of stone tools	no	
III horizon/ C4	Part of a house (AFig. 5.1.3a)	Dug into - filled with black soil mixed with charcoal, many sherds and two bone tools (one imitating a long blade (Gaydarska 2004 : AFig. 5.1.7H))		many sherds, a pot with missing upper part, animal bones, a bone figurine with traces of red ochre, copper slag; some of the sherds with red ochre.	Published as burnt house	Probably to the same house belong the burnt house rubble overlaid by fragmented flint tool and a stone axe found in the same square C4; the red ochre present more often in burial context
III horizon/ B4	Part of a house			a row of four stones under which fragments of two vessels were laid	Burnt rubbles	Most probably the house is related to the dwelling part in C4

Table 5.1.3 Copper Age dwellings from tell Galabovo

Location	Type of feature	Content/description of the feature
II horizon/ C4 in a house	Pit (5-7 cm deep) with periphery coated by sherds (AFig. 5.1.3b)	700 snail shells and a complete bivalve, pottery fragments cover the soil above the snails; broken animal bones around the pit
II horizon	Pit (5-7 cm deep)	yellow soil mixed with charcoal, animal bones, big amount of sherds, a whole vessel and a bone hammer.
II horizon	Pit (20 cm deep) with carefully clay-coated walls	light grey soil mixed with charcoal, sherds, animal bones, two flint tools and a fragment of a cup.
III horizon	Pit dug into the two previous horizons	dark-grey earth mixed with charcoal, ash, animal bones and big amount of sherds (several vessels were possible to be reconstructed, none of which, however, was completely whole). A bottom and big fragments of the lower part of a pithos and a rim and fragments from the walls from another pithos. Next to the pithos bottom some big stones were discovered. To the east of the pit there were fragments of a big vessel.
III horizon	Pit – not fully excavated	reddish clay soil, big amount of sherds and animal bones
Unknown BA horizon	Pit dug into the three Chalcolithic horizons	light grey soil, mixed with charcoal, a small amount of sherds and a flint spearhead.

Table 5.1.4 Copper Age features from tell Galabovo

south periphery of the tell (AFig. 5.1.1a). Archaeological evidence is summarised in Tables 5.1.3-5.1.4.

The published Eneolithic pottery from Galabovo tell is typical for the Karanovo VI ceramic assemblage (Late Copper Age in Bulgaria)(AFig. 5.1.4). A characteristic range of Copper Age artefacts and raw materials is shown in Gaydarska (2004 : AFig. 5.1.7).

In addition to the data from the tables, it should be mentioned that ECA pottery was found in one of the LCA pits. Although I was not able to reconstruct the context of discovery, the presence of Early Chalcolithic sherd (Gaydarska 2004 : AFig. 5.1.7N) in a later pit is an important indicator for "maintaining the past" in the Copper Age settlement of the Galabovo tell.

Bronze Age

The Bronze Age occupation on Galabovo tell is believed to start after a period of abandonment characterised by a sterile soil (hiatus) between the Chalcolithic and Bronze Age layers. The Bronze Age occupation sequence is defined through stratigraphic observations in the trench profile of squares E4 and D4 (AFig. 5.1.1b, c). Nine building horizons were identified on the basis of successive beaten clay surfaces. The vertical stratigraphy of the tell showed the presence of pebbles in the first Bronze Age horizon and layers of ash and charcoal in the second and third building horizons. The last two were claimed to be successive occupational layers, during which this part of the tell was not built on. The area was occupied again during the fourth Bronze Age horizon, whose inhabitants levelled the region before building. The first, fifth, sixth, seventh and eighth horizons were additionally marked by dwelling floors and in horizons 5, 6 and 8 also by oven floors. The floor of the dwelling in horizon 6 is built immediately over the house rubble of the preceding horizon without the traditional clay levelling. The evidence for dwellings and other archaeological features from the 7th to the 13th BA horizons is summarised in Tables 5.1.5-5.1.6.

In addition to the information in Tables 5.1.5 –5.1.6, a few more points should be made.

There are traces of burning visible in the profile of E4 (7th BA horizon) (AFig. 5.1.1c) while, in the description of the dwelling in the adjacent F4, no evidence for such activity is mentioned at all (courtesy of V. Gertcheva). If the stratigraphic correlation is correct, the features in E4/F4 (part of one or two houses) were treated differently in terms of ending the house(s)' life cycles.

The dwelling in F4 (8th BA horizon) overlays the burnt house in E4 from the preceding horizon. Its pithos was dug into the rubble of a dwelling from the 7th BA horizon but whether there was a beaten clay levelling between the two horizons was not specified.

Given the present condition of the data, it is difficult to conclude whether or not the houses from the 8th BA horizon are four separate or fewer, larger houses. However, they all share a common feature - traces of fire. And, what is more important, they show traces of different kinds of use of fire (see below, p. 80). In the centre of the dwelling in M5 (12th BA horizon) (AFig. 5.1.7), the burnt rubble lay under fragments of big cooking vessels that made investigators suggest the presence of a two-storey building. There were sherds among the rubble as well. Under the burnt debris, there was no layer of ash and charcoal - another argument for a second floor, since the usual evidence of a burnt thatched roof should have been a layer of ash and charcoal. There were no traces of expected floor levelling as well. Instead there was a layer of soil, ash, stones and small pieces of daub.

The other almost complete burnt house from 12th BA horizon in squares J5/6-K5/6-L5/6 was built immediately above the dwelling in the 11th occupational level. The house has two rooms, as the party walls do not match in the middle, thus suggesting some kind of formalised access (AFig. 5.1.9). According to some members of the excavation team, the dwelling had two entrances – on the East and the South walls. The number of tools, whole and fragmented vessels made the investigators conclude that the house was deliberately emptied before the fire. However, I should dispute such a claim on the basis of the number and especially the type of the inventory found in the dwelling (Table 5.1.8).

The information available for squares K4 and J4 is very contradictory and it was not possible to come up with a final consistent description of the archaeological evidence. The data from these squares should not be omitted as they contain an important claim that was not supported by the field documentation. Squares K4 and J4 were accepted as an unburnt house in the context of massive burning of the remainder of the 12th BA occupational level. The dwelling had a North - South orientation and contained vessels *in situ* some of which whole, as well as some tools. According to the field documentation for K4, there was a part of dwelling floor and a bottom of a big vessel, while, in J4, no structures but some whole vessels were found, as well as a small spot of a clay that covered the burnt debris from the previous horizon. However, the inventory book contains information on vessels found on an unburnt dwelling floor in J4 that contradicts the claim for the lack of a house feature. The square was heavily destroyed by past and present intrusions, which perhaps caused the obvious confusion in the description of the data. To summarize, it is important that there were no traces of fire in these squares but whether or not the identified dwelling activities were contemporary with the 12th building horizon is difficult to justify given the present condition of the data. Even in one of the publications whose main topic is the chronology of the tell based on pottery typology, the dwelling in J4 that contains one of the

Horizon/square	Type	Structure	Pithos	Ovens/ hearths	Inventory	Traces of burning	Comments
VII horizon/ E4	Part of a house (AFig. 5.1.1c)					Massive burnt house rubble- 20 cm thick	
VII horizon/ F4	Part of a house		Dug into	hearth	Two (bull) horns, a horseshoe movable hearth, overlaying similar feature	Under the first movable hearth a layer of ash and charcoal, among which big amount of river shells	Probably part of the above described dwelling
VIII horizon/ F4	Part of a house		A part of dug into	Probably an oven	N/A	Burnt house rubble	pithos's base coated with clay mixed with straw
VIII horizon/ H4	Part of a house		Two; one only with its base preserved	oven	A cup and a whorl in the pithos's base	Layer of ash and charcoal, overlaid by burnt house rubble	
VIII horizon/ G4	Heavily destroyed house				Sherds, animal bones, upper and lower grinding stones, around them spread *Vicia ervilia*	Layer of ash and charcoal	Dwelling floor of beaten clay
VIII horizon E4/E5	Heavily destroyed house				Scatters of fragments of big vessels	Layer of ash and charcoal	
IX horizon F3/F4	Part of a house	Eight postholes		oven	10 loom weights, fragment of a big dish very close to the wall	Spot of burnt rubbles over the oven	E-W wall preserved at 2.30m
IX horizon/I4	Heavily destroyed house	Pise- the wall is 50 cm long, 7.5 cm thick			Pottery scatter, two middle size broken stones, one antler, one flint and nine stone tools; among the rubbles many big fragments of vessels	Spot of ash and charcoal, spot of burnt house rubbles	Beaten clay floor 3.30m N-S, 1.90m E-W; the antler and 8 stone tools were under the clay base of the wall, the other two above it
IX horizon/H4	Part of a house					Layer of ash and charcoal above the clay, the soil contained pieces of burnt rubble/daub, sherds and animal bones	a beaten clay level
IX horizon /N5	Part of a house				scatter of sherds, small broken stones and animal bones; a whorl, a fragment of a whorl, a flint scraper, antler hoe		Among the scatter a big fragment of a vessel has covered a tortoise carapace
IX horizon /O7	Part of a house			oven plasters	sherds and animal bones		
IX or X horizon/ F4/E4	Part of a house			Oven	two heavily fragmented vessels *in situ*.	Above the floor layer of ash and charcoal, overlaid by burnt wall rubble	preserved floor 570 cm long and 245 cm wide
X horizon/ N5/N6(1)	Heavily destroyed house (AFig. 5.1.5)	rectangular; Northeast/ southwest orientation; 7 postholes			big fragmented jug, an urn-like vessel, a loom weight	10cm layer of ash and charcoal cover the floor; spots of massive burnt rubble	south wall preserved; between this and the next house 80 cm wide "street" was identified
X horizon/ N5/N6(2)	Heavily destroyed house (AFig. 5.1.5)	apsidal; Northeast/ southwest orientation; 8 postholes	Two build pithoi, belonging to two occupational stages		fragmented jug and two urn-like vessels; within the same area but in not very clear context a flint tool was found	layer of ash and charcoal 60 cm to the west of one of the pithos	north wall preserved 380 cm long , 25cm wide; wall base supposed to be coated by stones
X horizon/ F3/G3	Part of a house (Gaydarska 2004 : Afig. 5.1.9a)	Unknown		Heavily destroyed base of an oven or a hearth under the rubble and weights; another base of a rectangular oven to the east of the weights	15 loom weights, some of them had lain under the fallen walls, others above them; around one of the ovens animal bones and very fragmented pottery; whole vessel, pottery scatter; *in situ* grinding stone (Gaydarska 2004 : Afig. 5.1.9b)	burnt house rubble	The floor is immediately above the destruction of the preceding horizon even without the usual levelling; the depositional pattern of the weights made investigators conclude that more then one wall has collapsed
X horizon/ G3	Part of a house	four postholes			wall rubbles		
X horizon /O5	Part of a house (AFig. 5.1.5)		build pithos	Rectangular oven			preserved floor 340 cm long N-S and 200 cm wide E-W
X horizon/O7	Heavily destroyed house (AFig. 5.1.5)			oven	In the square a flint spear and a whorl were found		
XI horizon/ J3-5/K3-5/L3-5	Part of a house (AFig. 5.1.6a)	Northeast/Southwest orientation; eastern wall - 7 postholes; western and south each - 8		An oven, a second oven or a hearth, a feature with oxbow shape (oven or a hearth)	Over 30 whole and fragmented vessels (Gaydarska 2004 : AFig. 5.1.12), eleven of them form a *depot* (AFig. 5.1.6b); in the base of the west wall a big stone axe	the soil was full of charcoal; burnt rubble	investigated floor area 10 m to 5.75 m; the floor is directly upon rubble of a dwelling from the tenth building horizon without the usual clay levelling

XI horizon/ L7/K7	Part of a house	7 postholes			Sherds and animal bones	big pieces of burnt house rubble	Preserved floor 5 m long,120cm wide
XI horizon/ J8	Part of a house	4 postholes			Many broken stones; tools, vessels, a fragment of an altar derive from the same square	thick layer of burnt house rubble	
XI horizon/ O7	Part of a house			Oven	A whorl, a fragment of a whorl, small fragmented jug found in the square		Under the floor an urn with infant (child under 1) burial. The body was in crouched position
XI horizon/ O5	Parts of two houses			Two ovens, one in each house	fragments of a vessel next to one of the ovens; a whorl, a fragment of a whorl, antler tool found in the square		
XI horizon/ N6	Part of a house		build pithos	oven	two whorls, a stone polisher, a dish		
XI horizon/ M6	Heavily destroyed house				house debris		
XI horizon/ M4	Heavily destroyed house				sherds	Burnt house rubble	
XI horizon/ K4/5	Part of a house			oven or a hearth	many sherds; middle size broken stones; 3 vessels *in situ*;	big spots of burnt house rubble	
XI horizon/ K5	Part of a house		pithos	oven or a hearth	Scattered broken stones; pottery scatters	burnt rubbles	
XI horizon/ K6	Part of a house				sherds and broken stones spread all over the square	burnt rubble	
XII horizon/ M4/5-L4/5	heavily destroyed house (AFig. 5.1.7a)	N-S orientation	three build pithoi - one whole and two fragmented	oven and a hearth	10 loom weights; fragmented lower grinding stone *in situ*; 18 different finds around the pithoi and the grinding stone; three restored vessels with parts still missing; among the remaining sherds matching pieces but not restorable vessels (AFig. 5.1.7b – 5.1.8)	Massive burnt rubble	according to the field documentation the finds are 26, rather than 18
XII horizon/ J5/6-K5/6-L5/6	Almost complete house with two rooms (AFig. 5.1.9a)	Northeast/ Southwest orientation; east wall 14 postholes, west – 11, south – six postholes	big dug into pithos	Two ovens – one round, the other with oxbow shape	Two stone polishers, one fragmented stone tool, three whorls, four whole and 20 (AFig. 5.1.9b; Gaydarska 2004: 5.1.17A-Q) fragmented vessels; north of one of the ovens Bronze awl (AFig. 5.1.9I)	claimed to be destroyed by fire	Build immediately above the dwelling of 11 occupational level; preserved size 6 m to 8.5m.
XII horizon/ O7	Part of a house	broken stones; clay walls			big stone axe by the wall; pottery scatters; middle size broken stones; a dish, a cup, a whorl, stone hoe, fragment of stone tool	layer of ash and charcoal, burnt rubbles	eastern wall preserved 220 cm long and 20cm wide
XII horizon/ M7/N7	house with two rooms	Rectangular, N-S orientation	Scattered fragments of four pithoi	an oven/hearth, probable movable hearth	burnt broken stones; pottery scatters	burnt rubble	
XII horizon/ N6	heavily destroyed house		Pithos	Base of an oven, movable hearth	Broken stones, animal bones, sherds, fragmented vessel *in situ,* two whorls, bone handle, clay ball, clay weight	Ash and charcoal, spots of burnt rubble	
XII horizon/ N5	heavily destroyed house			hearth	4 whorls, an altar, 5 flint tools, a loom weight; a stone smoother		
XII horizon/ O5	heavily destroyed house			oven	fragment of an altar; fragmented vessel	Burnt house rubble	
XII horizon/ M6	Part of a house destroyed by Medieval pit			base of an oven	pottery and stone scatters	burnt house rubble	
XIII horizon/ N7/8-M7/8	heavily destroyed house with two rooms (Gaydarska 2004 : AFig. 5.1.18)	probably rectangular and with North-South orientation	build pithos	hearth	a cup and a dish under the floor in the south room; fragments of 14 vessels all together, among which fragment of a Trojan cup	spots of heavily burnt fine clay soil, as a result of a long fire activity but with no connection to any heating feature	
XIII horizon/ J6	heavily destroyed house				fragments of big vessels, animal bones among the rubble; big broken stone	layer of burnt rubble	
XIII horizon/ Q6	Part of a house				pottery scatter		
XIII horizon/ M6	Part of a house			an oven or a hearth with 2 loom weights in its base	pottery scatter, stone scatter	burnt house rubble next to the stone scatter	
XIII horizon/ N5	Part of a house (AFig. 5.1.10a)				small broken stones in a semicircle shape; two broken vessels; part of an upper grinding stone next to a stone polisher		The stones are over a level of beaten clay

Table 5.1.5 Bronze Age dwellings from tell Galabovo

Location	Type of feature	Content/description of the feature	Discuss
VIII horizon /G4 in a dwelling	Pit	Ash, charcoal and a whole vessel	15 cm deep, dug into the dwelling floor
X horizon/ N5/N6 in dwelling (1)	two shallow holes	ash and charcoal	
X horizon/ N5/N6 in dwelling (2)	A pit and a hole		
X horizon/ F3/G3 in a dwelling	A pit		reached and penetrated the destruction of the ninth building horizon
X horizon/ N5	few shallow holes	grey/grey-blackish soil	Depth up to 8 cm
X horizon/ N5	A pit, 55 cm deep, cut the previous two horizons	grey/blackish soil, mixed with ash and charcoal; animal bones and sherds	rubbish pit, related to the adjacent house in N5/N6
XI horizon/ O7	A pit	soil darker than the surrounding soil, sherds and animal bones	The pit has destroyed the oven of the lower dwelling
XI horizon/ O7	A hole	soil darker than the surrounding soil, sherds and animal bones	The hole has destroyed the previous horizon
XI horizon/ O7	A hole	soil darker than the surrounding soil, sherds and animal bones	The hole has destroyed the previous horizon
XI horizon/ O6	four ovens with traces of several reconstructions	Burnt clay level, covered by layer of ash and charcoal, within which fragments of a vessel; similar spot of burnt floor, ash, charcoal and vessel fragments was also identified in the square; an antler hoe and antler awl derive from the same area	no burnt rubble mentioned to present
XI horizon/ N5	heavily destroyed build pithos	scatter of small broken stones and sherds around it	not clear whether the feature is connected to the adjacent house in N6 or is an evidence of some outdoor activity
XI horizon/ L6/K6	feature of beaten clay	Over it two fired spots of scattered sherds and bones	possible relation to any dwelling/s in L6 and L7/K7 is not clear
XII horizon/ O7	round feature made of small and middle broken stones	small amount of fragmented pottery and bones between the stones; a whorl, a fragment of a whorl, a cup, a fragment of a stone tool, a dish and a stone hoe found in the square, fragment of lower grinding stone	Suggests some kind of outdoor activities
XII horizon/K5	spot of pottery scatter and a spot of burnt house rubble		The two spots do not overlay each other
XII horizon/K4	Beaten clay level	Few sherds, animal bones and bottom of a vessel on the clay	
XII horizon/O6	Stone scatter		Suggests some kind of outdoor activities related to houses in O7 or O5
XII horizon/O4	A base of oven/hearth		Suggests some kind of outdoor activities related to houses in O7 or O5
XII horizon/J8	a spot of burnt house rubble	animal bones, a dish, a piece of slag; a few sherds	
XIII horizon/ O6 or O7	A pit	ash, charcoal and sherds; imported “pilgrim flask” and bronze dagger (AFig. 5.1.10C-E)	prior to its excavation the feature looked like a spot of burnt soil and ash and charcoal
XIII horizon/M8	spot of dark-brown soil mixed with burnt daub small stones and little charcoal and animal bones	Among the sherds a rim and a neck of wheel made amphora, and a clay model of wheel	

Table 5.1.6 Bronze Age features from tell Galabov

discussed vessels- "a teapot"- is dated to the 12th-11th building horizon.

Some other features were identified as belonging to the 12th building horizon as well. In K5, a small pottery scatter and a spot of burnt house rubble were identified. The two spots do not overlay each other. The data from K5 is important since it shows that it is possible the evidence for fire is not *in situ* but rather an indication of a pattern of the re-use of burnt rubble. In the case of the 12th BA horizon, such a fact has special meaning since there is a house with traces of massive fire in J5/6-K5/6-L5/6 that borders on two areas (K4/J4) with no traces of fire at all.

The last feature to be mentioned from the twelfth occupational layer is a pit from M7. The data for this pit is very problematic as it has at least three different descriptions. In the first one, it contained burnt animal bones from a goat, pig, sheep and two cattle species. In the uppermost level of the pit, a gold hair spiral was found. In the second description, the pits contained a (human!?) cremation and a golden ring. And finally, in one of the Galabovo publications, this pit appears as belonging to the dwelling in M6/M7. It had almost vertical walls and its North wall goes under the hearth of the dwelling. The fill consisted of grey-black soil mixed with burnt organic material and a few sherds. At different levels of the fill of the pit, there were small burnt pieces of bones. Close to the base of the pit, there was a gold spiral ring.

In spite of these different descriptions of the fill, I would suggest that this is one and the same pit, whose content and interpretation has passed through several transformations from the field documentation to its publication. Undoubtedly, it is crucial to have precise information for a certain feature in order to present coherent discussion. However, for the pit from M7, it is not possible to reconstruct its initial content and context. The reason to take this pit into consideration here is that, even with such contradictory data, there is important evidence of associations. Features common to all the description are the bones (human or animal) and the gold (spiral ring or hair ornament). If the bones were human, that constitutes a burial within a tell. If the bones were animal, that questions the assumption that they were thrown away as rubbish, since gold is usually not connected with refuse activity. In both cases, these are important social practices that will be discussed in section 5.1.4.

The 13th BA occupational level is heavily destroyed by past and present human activities and there is very little evidence *in situ*. In O7, a level of beaten clay and disordered medium-size broken stones were discovered. In L7/J7, a pottery scatter, disordered medium-size broken stones and burnt house rubble were found. There was burnt house debris in P5/O5, together with a few, highly fragmented vessels. In P6, above a beaten level, there were four pottery scatters mixed with broken stones of different sizes (V. Gertcheva pers. comm.). This evidence together with the data in Tables 5.1.5 - 5.1.6 make it likely that this is a destroyed horizon, which may contain burnt houses and secondary use of burnt daub.

The last (14th) occupational layer has very uncertain vertical and horizontal stratigraphy and was identified during the last working season in 1995. Above the dwelling debris in N7/M7 (Gaydarska 2004 : AFig. 5.1.18) from what at that time was accepted to be the last occupation, another area of burnt rubble and traces of a hearth base were discovered. This fact made the excavators reconsider the existing stratigraphic sequence and a new building horizon (No 0 in the publication and field documentation) was added. On the floor of the newly identified house in N7 from the 14th building horizon, there was a pottery scatter, a hearth, part of a built-in pithos and fragments of other large vessels. In M7, a pit that reaches the 12th occupational layer but was dug from the level of 13th or 14th building horizon was found. It had step-line walls, coated with white clay and filled with grey-brown soil mixed with ash and sherds. The burnt house debris and few sherds and bones in M8 were assigned to the 14th occupation as well. On this basis, it was concluded that the final MBA settlement was "killed" by fire.

Burnt houses

For the purposes of this study, the archaeological evidence from Galabovo tell is summarised in Tables 5.1.7 - 5.1.10 with regard to the research issues outlined in chapter 3.2. Table 5.1.7 presents the evidence for traces of fire within each occupational layer. Such evidence is documented in two out of the three Copper Age building horizons and in 10 out of 14 Bronze Age building horizons (IX/X is not considered as separate horizon). This relatively high number raises serious doubts about the explanation of hostile invasions that may have caused the fires. Such a claim has not been made for the Galabovo tell in particular but this is one of the explanations given for burnt houses/horizons in Bulgarian prehistory (e.g. Yunatsite tell: cf. Chapman 1999). The other possible explanation is accidental fire that was not discussed but simply taken for granted in one case in Galabovo – the house in J5/6-K5/6-L5/6 (XII BA horizon).

In order to evaluate the nature of the Galabovo burnt horizons, the evidence for burning was summarised in Table 5.1.7, where in the first column are the squares with no traces of fire mentioned at all (courtesy of V. Gertcheva). In the second column are the squares/features that have some traces of fire but where the *in situ* situation cannot be clarified (e.g., because of strong past or present destruction) and the burnt remains are not "closed complexes" (e.g. non-overlaying spots of rubble and pottery scatters). Some of the squares contain fire products as ash, charcoal, burnt clay floors but not burnt house debris. On this basis, I should assume that these squares present evidence for control over fire or fire

products. The scattered burnt rubble in some squares (e.g. K5, J8 XII horizon, etc.) and in the pithos from the XI occupational level suggests secondary use of daub from contemporary or earlier houses. Claims for the controlled use of fire are additionally supported by the data from the houses in F3/G3 from the X building horizon and in M7/N7 from the XII building horizon, where parts of the houses in F3 and M7 contain traces of fire *in situ* (floor overlaid by layer of ash and charcoal and finally sealed by burnt rubble), while parts of other houses, respectively in G3 and N7, have some traces of fire but not massive burnt daub wall discards. It is possible that the rubble was destroyed by later intrusions. However, that should result in the fragmentation and consequent spread of burnt debris rather than in the disappearance of burnt daub. The last column summarises the evidence for intensive fire documented by the above-mentioned *in situ* sequence. In most cases, these concern almost entire houses (e.g. in M4/5 – XII building horizon) but there are parts of houses as well (e.g. O7- XII building horizon).

Burnt horizons	**Squares/features with no traces of fire**	**Squares/features with some traces of fire**	**Squares/features with traces of massive fire**
Copper Age I			C4/B4
III	B4		C4
Bronze Age II		D4	
III		D4	
VII		F4	E4
VIII		G4, F4	H4
IX	O7, N5	H4	I4, F4
IX/X			F4/E4
X	O5, N5	O7	N5/N6, F3/G3,
XI	N5, N6, O7, M6	O5, O6, K6/L6, L7/K7, M4	J4/5-K4/5-L4/5, L6, J8
XII	N5, K4, J4	N6, O5, J8	M4/M5, J5/6-K5/6-L5/6, O7, M7/N7,K5
XIII	N5, Q6	M7/8-N7/8, M6	J6
XIV		M7/8-N7-8	

Table 5.1.7 Spatial distribution of evidence for fire by level in Tell Galabovo

Table 5.1.7 shows a trend towards the diversification of use of fire with the increase of the excavated area. Whether such a trend reflects the situation in which management of fire has started from the time of IX building horizon or such practice of deliberate and controlled fire was known since the Chalcolithic occupation is not possible to establish according to present data. It is also not possible to reconstruct the exact process of intensive or less devastating fire due to the paucity of consistent details of the sequence of burnt remains in the publications and field documentation.

However, some activities that most probably have taken place before the actual fire, such as "emptying" the house of artefacts or, conversely, the deposition of objects as a "house set" could be explored on the basis of the summary in Table 5.1.8. The table contains information on the type and number of objects found in the houses under burnt rubble. Although it is important to relate the size of the excavated structure to the number and variety of the discovered objects, in this particular case it is problematic. There are parts of houses that are empty (N5/6 – house 2 - X building horizon) and parts of houses that contain over 20 objects (C4 – III Chalcolithic building horizon). Bearing in mind that some of objects may well have been located in the destroyed/ unexcavated parts of the house, I should suggest that the patterns documented in table 5.1.3 are to some extent conditional. According to the present data, it is evident that there were no massive fires which burned an entire settlement horizon. Accidental fires are not to be excluded but the presence of some objects in the burnt houses (e.g. the bronze awl in J5/6-K5/6-L5/6 – XIII building horizon) that could easily have been removed in a dangerous situation suggests that the inventory of the burnt houses was not chance occurrences. Therefore, it is very likely that the fire was not accidental but, rather, that the burning of houses was an intentional social practice.

Looking at the burnt house inventories, two patterns are apparent:- houses that are "empty"(0-10 objects all together) and houses that contain, if not a full, a fairly sufficient set of household objects. I should assume that these two patterns serve different purposes within one and the same social practice of successful reproduction. Brück has argued (1999) that the life-cycle of a house is related to the life-cycle of its inhabitants. Renovation of the floor, building/ digging a pit for a new pithos or for other purposes may well have denoted an important event in a household or community life in addition to any practical benefits. Deliberate burning of houses seems irrational only from our modern concept of a house. If a house is a way of mediating the lives of the inhabitants with the world as a whole, as well as a place to live in,

burning the dwelling could mark the entry of a new member into the household, which should be followed by a) negotiating his/her social status, and b) enlarging the living space of the house. Other socio-economic events (birth, death, a good harvest or a successful long-distance journey) may be memorized, celebrated or disputed on the constrained tell area through the act of burning, using the burnt materials and arranging the pre-fire house inventory. Unfortunately, the present condition of Galabovo data does not allow such a complex approach for investigation of the possible social events and their material expression in archaeological evidence.

The only case in which a possible symbolic burial (perhaps of an important member of the community) can be assumed is the burnt house from the last Chalcolithic occupation. It contains a bone figurine with traces of red ochre, as well as some sherds with red ochre. Red ochre is always found in a burial context in Maritsa Iztok, in graves usually connected with the Pit Grave culture. The earliest burial in Maritsa Iztok (see p. 119 - 120 for details) is the primary grave of Gonova mogila, dated to the end of the IV mil. BC (Kunchev 1991). The deceased was covered by red ochre and grave goods consisted of an obsidian blade, copper beads and shells. Apart from red ochre, two more objects from the burnt house inventory are reminiscent of the grave set of the earliest grave in Maritsa Iztok - a bone imitation of a flint superblade, deposited in a pithos (Gaydarska 2004 : AFig. 5.1.7H) and a piece of copper slag. These general similarities between the grave set and the burnt house inventory give grounds for interpreting the house inventory as a symbolic burial, with the bone figurine as the dead persona.

Horizon	House inventory			
Copper age I	B4/C4 – a grinding stone, 2 whole and 4 fragmented vessels, 11 flint tools (excluding the flints in one of the vessels), 5 stone tools, 2 fragments of stone tools, fragment of a whorl, a bone pendant			
III	C4 – 9 flint tools, 2 vessels, a clay spoon, 2 stone tools, an antler tool, a horn tool, a piece of copper slag, a bone figurine, fragment of a bone figurine, fragment of a whorl, fragment of a loom weight			
Bronze Age VIII	H4 – 4 vessels, 2 whorls, a lid			
IX	I4 – 2 whorls, many fragmented vessels (number not known)	F4 – fragments of a big dish, 10 loom weights		
IX-X	F4/E4 – 2 heavily fragmented vessels			
X	N5/6 – house 1- 2 vessels, a loom weight	N5/6 – house 2 – no finds	F3/G3- 10 vessels, a clay spade, a whorl, 10 loom weights, 2 grinding stones	
XI	J4/5-K4/5-L4/5 – over 30 vessels, a fragment of a stone adze	L6- fragment of a dish, 3 whorls, a horn tool, a stone adze	J8 – an altar, 2 flint tools, a bone awl, a lead	
XII	M4/5 – a grinding stone, 18 finding (unspecified bone, stone and pottery tools), whole and fragmented vessels (number not known)	J5/6-K5/6-L5/6 – two stone tools, 3 whorls, a bronze awl, fragment of a stone tool, at least 4 whole and 20 fragmented vessels	O7- 2 vessels, a stone hoe, a fragment of a stone tool, fragment of a whorl, fragmented vessels	M7/N7 – 6 whole and some fragmented vessels

Table 5.1.8 Inventories of burnt houses, Galabovo tell

Structured deposition

Structured deposition features (mainly pits) were excavated in almost every building horizon. The content of the pits varies enormously but, in general, all of them contain soil, ash, charcoal, sherds and animal bones. Foundation deposits, as well as some unusual findings (e.g. a bead in an imported Syrian bottle) were also discovered. The evidence for structured deposition and foundation deposits is summarised in Table 5.1.9.

In addition to the data from Table 5.1.9, there are four more pits which cut through several earlier levels:– a pit that has destroyed the three Chalcolithic layers; a pit penetrating the X and IX building horizons; a hole that has broken the pithos in house N7/M7 from the 13th occupational level; and finally a Medieval pit that has destroyed at least three upper BA layers. Therefore, it may be concluded that pit digging was not a rare practice on the Galabovo tell. In the reports, the function of pits was considered as unknown or, in one case, as a rubbish dump. I should rather suggest that pit digging was a purposeful process that has no unified explanation. It was argued that pits on tell are connected with a targeted interrelation with the ancestors (Chapman 2000c). This

may well be the case with the pits in square B4 from the last Chalcolithic horizon, that contain parts of two different pithoi and vessels with missing parts (see next section). The evidence from O7 in the 11th building horizon, with three pits and an infant burial, could be interpreted as some kind of deliberate depositional pattern, in which the symbolic relation between the ancestors, the newly dead and the living was crucial.

Horizons	**Structured deposition**	**Foundation deposits**
Copper Age I	A pot with flint tools and flakes	
II	3 pits	
III	2 pits, fragments of two vessels under row of stones, pithos filled with soil, charcoal, sherds and two bone tools	
Bronze Age VIII	A pit, base of a pithos containing a cup and a whorl	A pit beneath the floor that contains a whole vessel
IX		2 whole and 6 fragmented stone tools, a fragment of a antler tool and 1 flint and one stone tools
X	2 pits and several shallow holes	
XI	Child burial, 3 pits, a vessel with a bead, a vessel in a tortoise shell, pithos with big pieces of daub	A stone axe
XII	A pit and a few shallow holes	A stone axe
XIII	A pit	A cup and a dish
XIV	A pit (not sure stratigraphic data – either XIII or XIV horizon)	

Table 5.1.9 Evidence for structured deposition and foundation deposits

Such an intentional depositional practice may have taken place during the next occupation in square M7, if the bones in the pit were human. If the bones were not human, I should suggest that this was a symbolic burial as spiral gold pendants are found in three barrow burials in Maritsa Iztok, while so far gold objects have not been excavated within any other settlement context. Deposition of animal bones in pits is fairly common on the Galabovo tell. It may be connected with feasts or a fertility cult or the memorial rites of feeding the ancestors. I would suggest that the gold spiral pendant was deliberately put to emphasise the "burial" element of digging the pit. In a moment of social tension when there was no dead human body, (burnt) animal bones together with the gold pendant recalling/evoking "real" burials may well have framed the "stage" for the re-negotiation of important social issues.

Alternatives to the ancestral hypothesis of pit-digging are also likely. Burying over 700 snail shells may have been a memorialisation of a communal feast, when the inhabitants from the second Chalcolithic horizon re-settled the area above the burnt first settlement. The careful construction of the pit itself and the position of the shells - ordered, not simply thrown - reveal some act of deliberate deposition rather than rubbish dumping. The distribution of animal bones suggests that the place may have become a place for recurring feasts or memorials.

Fragmentation

Fragmented objects are widely spread all over the 17 occupational layers in a variety of contexts – on the floor, in pits, under ovens, etc. Pottery sherds are the most numerous findings at Galabovo tell. The possibility of accidental and/or deliberate breakage has already been discussed (Chapman 2000) and the emphasis here is on the post-breaking treatment of the pottery. In several cases (e.g. XII BA horizon – dwelling in M4/5-L4/5) some vessels from the pottery scatters could be restored, while others could not. An attempt to find the missing parts in other places/features within the tell has not been made, apart from the targeted search for missing fragments of imported vessels and large pithoi. More evident deliberate fragmentation practice is to be found in structured deposition features. The base and the lower part of a pithos and a rim and walls from another pithos were deposited in a pit from the third Chalcolithic building horizon. I should assume that the lower and the upper part of two different vessels were intended to evoke the image of a new "entity" that interrelates previously separated objects and in the same time links them to the ancestors, as they are deposited in a pit that penetrates the two horizons. The pit also contains some vessels with missing parts. I should suggest that the content of the pit reveals an act of lineage/household enchainment (the pithoi fragments) and personal enchainment (the vessels with missing parts), memorialised through burial in ancestral soil.

There are some groups of objects that support the idea of deliberate fragmentation . These are objects that are hard to break accidentally and "useless" after breakage. Their type and distribution is shown in Table 5.1.10.

Horizons	Whorls	Loom weights	Stone tools	Bone/horn objects	Net weights	others
Copper Age I	1		2			
II			2	1		1 lid
III	1	1		1		2 altar
Bronze Age VIII	1			2		
IX	1					
X	1	1			1	Clay mould for awl
XI	4		1	1	1	
XII	2	4	5	1	3	1 lid
XIII	5		3	1	1	2 - clay models of a wheel,1 lid
XIV				3	1	1 spoon
Unstratified	2	4	8	7		1 altar, 1 figurine

Table 5.1.10 Fragmented objects from Tell Galabovo

The last archaeological evidence to be discussed, concern the notion of the vertical continuity of features as an indicator of diachronic continuity in social relations (Bailey 1990). The data from Galabovo is summarized in Table 5.1.11.

BA Horizon	Square	Type of feature
VI over V		
VIII over VII	E4/F4	Pithos dug into destruction of the previous dwelling
X over IX	F3/4	Floor overlaying destruction of the previous dwelling, without the usual clay levelling but there is change either of the direction or the plan of the house, since the two floors do not match
X	N5/6	Destroyed pithos, the new one moved
XI over X	K3/6-J3/6	Floor overlaying destruction of the previous dwelling without the usual clay levelling
XII over XI	J5/6-K5/6-L5/6	Floor overlaying destruction of the previous dwelling without the usual clay levelling
XII over XI	O7	An oven moved 80cm to the south of the preceding
XIII over XII	M7-N7	Overlaying ovens/hearths

Table 5.1.11 Evidence for feature continuity and discontinuity

As Table 5.1.11 shows, the pattern of direct overlaying of features is not consistent. It is possible that those dwellings which **are** built immediately above the preceding belong to members of the society whose presence on the tell required material reinforcement. However, given the present state of the data, conclusive claims cannot be made.

5.1.2 Plant and animal remains

Several thousands animal bones were found during the first three seasons of the Galabovo excavations[2]. Among them, 5,033 could be assigned to species level. The distribution of the number of bones by horizon has not been presented, which prevents estimation of possible flock size. Therefore, it was not possible to calculate the range of necessary resources for pasture. The results of the animal bone analysis can be found in Gaydarska 2004 : 172-173.

[2] The animal bones were studied by G. Ribarov and the report is still unpublished.

Palaeo-ethnobotanical investigations have been undertaken for both the Chalcolithic (36 samples) and Bronze Age (36 samples) layers, as well as for the hiatus layer (1 sample)[3]. The samples were extracted by flotation from different archaeological features. Seventeen samples did not contain any plant remains, including the sample from the buried soil between the Copper Age and Bronze Age occupations (the so-called hiatus).

Copper Age

Samples were taken from a pit and from vessels in the house in B4. There were no plant remains in the pit, while the soil from the dwelling contained grains of *Triticum monococcum*, *Triticum dicoccum*, *Lens culinaris*, *Vicia ervilia* and *Hordeum vulgare*. The same species were present in the sample taken from a vessel in C4. Imprints from burnt daub (floors and walls) have also been analysed. Out of 192 studied fragments, 129 had traces of grain impressions. They contained the same suite of cereals as in the flotation data (Table 5.1.12).

Bronze age

There are only two samples from the layer that immediately follows the hiatus and they contain single grains of *T. dicoccum* and *V. ervilia*. The next samples are from the tenth building horizon and consisted of *Triticum monococcum*, *Triticum dicoccum*, *Lens culinaris* and *Vicia ervilia*. Some contextual information is available for the plant remains from this layer. In the house in square F4, the soil around the group of loom weights contained grains of einkorn, emmer, vetch and lentils. More interesting is the find of 500 g of vetch spread around the grinding stone in square G4. This evidence raises the question of vetch preparation and consumption. It is generally accepted that soaking of vetch to remove toxic elements us necessary before its use like other legumes. The Galabovo find suggests that it may also have been ground like cereal grains.

Samples from the next building horizon (11^{th}) are poor in general, with single grains of wheat, barley, lentils and vetch. Interesting finds are a charred fruit of fig and a cornelian cherry stone. The twelfth occupational level has the same distribution of main cereal and legume species but provides some more contextual data. Within a pottery scatter in K4, single grains of barley and more than 100 grains of vetch were found. Around the oven in square K6, a large quantity of lentils mixed with vetch was recovered. About 50 g of vetch was found in the soil of an amphora-like vessel in the dwelling in M5. A similar amount of lentils was extracted from the profiles in L5/6.

The weeds presented in BA Galabovo are typical mainly for spring-sown crops. *Rumex acetosella*, *Bromus secalinus*, *Chenopodium album*, *Polygonum lapatifolium* and *Argostema githago* are usually spread across meadows and fallow lands and some of them are suitable food for both humans and animals. *Rumex acetosella* indicates a dry acid soil, more common in winter cereal fields than in summer cereal fields, also typical for fallow lands and dry pastures. The seeds are surely not edible, but the leaves are nutrient-rich and vitamin-rich and can be eaten as sorrel sauce or soup. *Bromus secalinus* is an indicator of dry meadows, cereal fields, suitable as animal fodder (usually grazed by cows and sheep) and could be used for human famine food. *Chenopodium album* is an almost ubiquitous weed but especially in cereal fields and on trampled ground (by tracks). It is definitely edible, since the seeds were often harvested and cooked, producing a mush. *Polygonum lapatifolium* is a typical component of wet weed communities but is also natural in channel beds. It was probably not used for human consumption. *Agrostemma githago* is found in both dry and wet cereal fields but is surely not edible (Eniko Magyari pers. comm).

Samples of carbonised wood have also been analysed from the Galabovo tell. The fifteen samples contain 327 fragments that showed a dominant presence of oak, and less hornbeam, maple and hazel. There is also a very high percentage of coniferous species, especially in squares N7 and J8 of the last MBA layer. The wood had suffered some specific deformation, that could be a result either of high pressure or of a very old age. There were two types of such torsion:- a) fragments with typical traces of remaining in water; and b) fragments with a very hard shiny surface. The wood taxa ware juniper, fir-tree and cypress, that are not typical for the region now and during the BA as well. This made the investigator conclude that most probably these pieces of wood derived from some kind of coal seams. Surface coal seams are often met in Maritsa Iztok and it was suggested that they were already used by prehistoric communities.

Plant remains at Galabovo tell are typical for the agricultural societies of the Balkans. Most of the grains were found in contexts of food storage (e.g., pots) or food preparation (e.g., ovens). The charcoal remains found at the tell indicate tree species which may have been used for both building and fuel. An additional fuel supply is possible from the abundant surface coal. The degree of human impact on the natural vegetation (deforestation and cultivation) is not yet possible to reconstruct.

[3] Current summary of plant remains evidence is made after few articles of Popova (1991, 1995, 1995a, 1998 together with Bozilova, 2001)

Species	Chalcolithic grains/flotation	Chalcolithic grains/impressions	Bronze Age
T. monococcum	+	+	+
T. dicoccum	+	+	+
T. spelta	+	+	+
T. compactum	+	+	+
Hordeum sp.	+	+	-
Hordeum vulgare vulgare	+	+	+
Hordeum vulgare nudum	+	+	+
Vicia ervilia	+	-	+
Lens culinaris	+	-	+
Cornus mas	-	-	+
Ficus carica	-	-	+
Rumex asetosa	+	-	-
Rumex acetosella	+	-	-
Bromus secalinus	-	-	+
Chenopodium album	-	-	+
Polygonum lapatifolium	-	-	+
Argostema githago	-	-	+
Secale cereale	-	+	-
Lathyrus p.	-	+	-
Carpinus betulus	-	+	-

Table 5.1.12 Plant evidence Tell Galabovo

5.1.3 The site and its surroundings according to the GIS analysis

The tell of Galabovo is located in the Westernmost part of the Maritsa Iztok study area. It is on a 1-2^0 gradient terrace of the river Sazliika (CDFig.1) but the initial distance from the river is not possible to reconstruct. At present, almost no elements of the original natural environment have been left intact. The maps used for the terrain reconstruction are from the early 1970s, when most of the tell surroundings were flat or with a 1-2^O slope. About 450-800 m to the North East, there are terraces that reach up to a 4-5^0 gradient. The tell has a Western aspect (CDFig.2) and relatively low visibility. No archaeological sites are visible from the tell, apart from the (much earlier) Neolithic settlement near the village of Obrutchishte (CDFig.3). Since the latter has an uncertain location (see section 5.2.2), intervisibity between Galabovo and Obrutchishte is possible but not sure. The publications of the Galabovo tell claim an altitude of 111 masl, while the maps used in the current study show 106 masl (CDFig.4). A second visibility analyses was undertaken with an additional 8 m tell height. In comparison with the previous viewshed, only the immediate vicinity had better visibility, yet with no evidence for any intervisibilily with other sites (CDFig.5). In both viewshed analyses, the maximum visible area from the tell was 3km. There are some visible spots 5 km to the South East towards Obrutchishte and 10 km to the North East, as well as towards the site of Mednikarovo.

The cost distance analysis from Galabovo was made on the basis of slope. The result was a set of 10 zones differentiated according to the accumulated cost needed to reach any point within the landscape from the tell (CDFig.6).

The distribution of sites within the 10 cost strips is summarised in Table 5.1.13.

N of cost strip	Sites located in the cost strip
2	Obrutchishte flat site, Iskritsa dwelling site, Iskritsa pit site, Atanasivanova mogila, Tcherniova mogila – all locations, Goliama Detelina flat site,
3	MIBC, Goliamata, Malkata and Ovchartsi barrows, Taniokoleva mogila 1, Manchova mogila, Klisselika, Gudgova and Mednikarovo tells
4	Taniokoleva mogila 2-4, KMBC, Kurdova mogila, Barrow4
5	Aldinova, Polski Gradets tell
6	Ovcharitsa I and II, Gonova barrow, Polski Gradets pit site

Table 5.1.13 Site distribution around Galabovo tell

In summary, when Galabovo was founded, it was relatively far from possibly contemporary Eneolithic sites. The same pattern was observed during the Bronze Age re-occupation but, at this time, there was greater site diversity, as at least 10 barrows were located in the second and third cost strips.

On the basis of cost distance maps, least cost paths were derived between Galabovo and all the remaining archaeological sites (CDFig.7). There are three major paths that start from the tell. One of them follows the river Sokolitsa valley in the Southern part of the study area, the other follows the river Ovcharitsa valley in the Northern part of the region. Between them is the third route that follows the hilltops to the Mednikarovo/Iskritsa barrow cemetery (MIBC). From the two main routes along the valleys, there are separate tracks to each of the sites (e.g. the route form Galabovo to another BA site – Gonova mogila - has several branches that lead to Ovcharitsa I and II, to Polski Gradets tell, etc) For a more detailed description of routes from/to Galabovo tell, see Appendix A p.197-198.

Visibility from paths

The general visibility of the North path is mainly over the flood-plain of the Ovcharitsa River and not that wide as the visibility along the South route (CDFig.16). The low hills South East of the path are visible or not depending on the different branches that lead to a particular site. In that sense, the best visibility over the hills is provided while walking along the path from Galabovo to the Polski Gradets tell. Moving North East towards the most remote sites, the visibility increases in length but not much in width, remaining mainly within the limits of the valley and occasionally over the hills. The Southern part of the study region – the Sokolitsa valley and the Sakar foothills - are hardly visible at all, apart from some small spots to the South West at the very edge of the coverage.

The last route - to MIBC – crossed the areas affected by the mines and its tracks could not be clearly established (CDFig.17). Due to its uncertainty, the visibility from this path is not taken in consideration.

Since the tracks of the two main routes match the tracks derived from the cost surface of the two destination points – Gonova mogila to the North East and Gudgova mogila to the South East - the visibility from the routes matches as well. However, the change of direction of movement imposes a different sequence of views until the final panorama is achieved. These sequences are discussed in the Gonova mogila and Gudgova tell case studies.

The landscape visibility from paths to the sites situated on these main routes is not discussed in the relevant case study, since such paths and their visibility will be discussed later (e.g. Atanasivanova mogila is between Galabovo and Gudgova tells and the paths and their visibility from/to the barrow and from/to the tells will be discussed in the case studies of the other two sites). Site visibility, however, from the segments that form the main routes is taken into consideration and discussed in each case study.

The majority of sites along the two main routes are located in an area in which they can be seen from the paths to the different barrows and flat sites. The number of visible sites increases as one moves East North East along the North route and, respectively, East South East along the South route (see Appendix A p.197-198).

Resources and land use

The site catchment analysis for the Galabovo tell was applied using a circle of 5 km radius (1 hour walking) from the site, the commonly accepted subsistence area limit for agricultural societies (Chisholm 1968; Higgs & Vita-Finzi 1970: see above, p. 35-36). Table 5.1.14 shows the distribution of soils around Galabovo in 10 successive rings, each of 500 m radius.

It is obvious that the present status of soil distribution around the tell suffers a huge human impact, seen as a removal or replacement of 1,185ha of natural soil (CDFig.50). A further 4,541ha do not contain any information for soil distribution since they are either occupied by contemporary mining constructions and settlements (the town of Galabovo and the village of Obrutchishte) or fall outside the study area for which relevant data was not available. Given the devastated condition of the region, a traditional application of SCA was not possible, so an alternative approach was used to explore possible resources and land use. First, estimations were done for subsistence potential according to the contemporary conditions. Secondly, an interpolation was made for possible soil distribution that provides different estimates for subsistence potential. Finally, it is suggested

that the Galabovo exploitation potential lies between the two estimates.

Distance from site	Meadow	Cinnomonic	Smolnitsa	Initial pedogenesis	Artificial soil	Without soil
0-500m	17ha	-	-	-	-	-
500-1000m	59ha	1ha	-	-	-	-
1000-1500m	107ha	49ha	11ha	-	-	-
1500-2000m	159ha	59ha	17ha	41ha	7ha	-
2000-2500m	165ha	2ha	47ha	113ha	30ha	-
2500-3000m	171ha	19ha	65ha	146ha	64ha	-
3000-3500m	57ha	2ha	154ha	177ha	21ha	-
3500-4000m	83ha	-	169ha	164ha	27ha	-
4000-4500m	96ha	8ha	248ha	127ha	29ha	13ha
4500-5000m	58ha	12ha	289ha	47ha	77ha	102ha

Table 5.1.14 Soil distribution around Tell Galabovo

Exploitation area

A starting point in this case study of site catchment is the reconstruction of the population number of the tell. Since the site was not fully excavated, only indirect data from other prehistoric sites in Bulgaria was used. It is accepted that one and the same number of people have inhabited the tell through the whole occupational sequence, bearing in mind, however, that this is a mean figure and fluctuations and deviations were highly probable. Two sources for demographic analyses were used –Todorova's estimations for the Eneolithic tell Ovcharovo in North East Bulgaria (Torodova et al. 1983) and Russell's calculations for Near Eastern tells (Russell 1958, cited by Dennell and Webley 1975). According to Todorova, the average number of occupants of each building horizon is 48 (Torodova et al. 1983). The area of the Ovcharovo tell is 2,826 m^2, i.e. a quarter of the Galabovo tell area of 12,500 m^2. If we assume that the number of people inhabiting the Galabovo site were 4 times more than the number at Ovcharovo, this gives a figure of 192 persons. Russell's estimations are for 125 persons per ha, which for Galabovo case result as 150 persons. The average[4] value of the figures is 171 and that is the number of people accepted in the current study as a starting point of the SCA.

Dennell and Webley (1975, citing Clark and Haswell (1967)) have claimed that 210kg of grain per person per year is the minimum amount of cereal that would provide the necessary calories and protein for a population entirely relying on cereal consumption. They have also argued that a yield of 400kg per ha is an appropriate crop for prehistoric agriculture (Dennell and Webley 1975 : 106). If we reduce the amount by 50% taking into account spillage, disease, rotting and seed for the next year, that will give a figure of 200kg/ha. So, for a population of 171 persons an annual yield of 35,910 kg grain is needed. For a crop of 200kg/ha, that indicates an arable land requirement of approximately 180ha.

The second point is a further development of the idea discussed in Gaffney et al. (1985) (see p. 36), in which domestic animals and pasture are included in the estimations of exploitation area. The very first circle around the site is assumed to be mostly used for animal pasture for three reasons:- a) protection of stock from predators and b) the availability of good grazing on riverine soils (Dennell and Webley 1975), and c) the preservation of crops from domestic animals.

Following the two major points, calculations of the possible resources around Galabovo tell were made. According to the data from Table 5.1.14, only 17 ha of meadow soil is available within the first 1-km ring. The land that covers the distance between 500 and 1500 m around the site (1-3 km in diameter) contains the necessary amount of 180ha area suitable for agriculture. Considering the fact that some of the land might have been used for fallow and/or browse, another 500m were added in order to delineate the possible exploitation area. The total area of 2 km in radius from the site contains enough potential to sustain a mixed agro-pastoral subsistence for a community of 171 persons.

The second estimation of the potential Galabovo exploitation area is made on the basis of interpolation. The pattern of soil distribution as given in Table 5.1.14, despite the obvious gaps, shows a dominance of meadow soil around the site. More substantial soil diversification appears in the area beyond the first km around the site. Such a pattern could be anticipated, bearing in mind that the river Sazliika was in the near vicinity of the site and that the tell lies near the confluence of the rivers Sokolitsa and Sazliika[5]. The assumption that the area of 1

[4] For the purposes of simplicity the introduction of the method for population estimations are given for just one figure. In the following case studies the estimations are made for a range of figures.

[5] The position of the original riverbeds of both rivers is difficult to ascertain, as huge hydro-engineering work was done to drain the area for opencast mining. Additionally, this information is

km radius around the site is covered by only meadow soil gives a figure of 314ha – easily sufficient for the necessary 180 ha arable land, plus areas for pasture and fallow.

If this is an extreme situation of the distribution of only one type of soil - and there is no certain evidence to support this - I should rather suggest that the exploitation area for the Galabovo tell population was between the two figures – a 1 km radius if totally dependent on meadow soil and a 2km radius given the current soil distribution. Most likely, the active exploitation area did not exceed 1.5 km in radius. This is not to say that the land beyond that point was not in use. Fruit and herb collection and some form of herding may have taken place within the area of 1 hour's walking. Hunting most probably was at a greater distance in the natural forests but not beyond the area bounded within 10km in radius from the site - a limit accepted for hunter-gatherers (Chisholm 1968; Higgs & Vita-Finzi 1970). Even in the present devastated condition of the study area, there is patchy woodland 10 km from the tell (Fig. 4.3.2), not to mention the distribution of the cinnomonic forest soil as an indicator for possible woodland South East of the tell Galabovo. The issue of initial forest clearance to free space for cultivation cannot be discussed in the absence of any pollen data from the region. Only an assumption could be made that it was a gradual process that started towards the end of the Copper Age. In the first place, wood was cut for house construction and fuel. The cleared area was then expanded and some cultivation may have started. The area was gradually enlarged until the exploitation area was more widely utilised.

A different scenario depends on the fact that, at the end of the Eneolithic, the Upper Thracian Plain was relatively densely settled by agricultural communities. If the first Galabovo occupants moved to the place as a result of some demographic or social process and they came as agriculturists, then a more intensive and target-oriented forest clearance should have taken place. However, until palynological data is available, the second hypothesis seems more likely as the material culture of Eneolithic Galabovo bears close similarities to what is known from contemporary Thrace; the first settlers in Galabovo were part of the extensive agricultural Copper Age network called KGK VI.

An expansion beyond the 2-km exploitation area could either maintain/sustain a larger population or contribute to social storage as surplus and/or for trade (Halstead & O'Shea 1989). The presence of three pithoi in a house in the 12th building horizon and two such pithoi in a 8th building horizon house supports the idea that some households had produced and stored more grain/flour than necessary for their daily/yearly consumption. There are two possible explanations for an increase of crop production –a) decrease of population given the diminishing occupational area in each subsequent horizon but with cultivation of the same area of arable land; and b) cultivation of new areas that incorporated the smolnitsa soil, distributed beyond the 1.5 km exploitation area. The 12th building-horizon house with the three pithoi dates to the MBA. No other settlements are known from that time in Maritsa Iztok study area and, in comparison with the EBA settlement distribution, there is an obvious overall population decline. Population decline, however, means diminishing of the number of workers, hence the ability to process the whole exploitation area (1.5 km in radius). Although the possibility for demographic change should not be excluded, it is worth considering the second possibility as well. So far there is no certain evidence from the Galabovo tell for tools that could facilitate the processing of the heavy smolnitsa soil. There are some indirect data from the osteological analysis, if we make the assumption that adult cattle were required for plough cultivation (Ribarov, n.d.). The number of the adult cattle individuals during the BA occupations is 73% - 20% more than during the Chalcolithic. But, within the BA sequence, this percentage diminishes through time, leaving the MBA horizons with fewer adult cattle individuals in the total sample. Therefore, it is possible to assume that the increased grain quantity along with smaller cattle herds implies the cultivation of very fertile soil. Indeed, it is also possible that the increased production of grain is due to some form of manuring but so far there is no secure evidence. Moreover, after centuries of cultivation, the meadow soil in the initial exploitation area (1.5 km in radius) probably suffered some exhaustion and new areas may well have been incorporated. Within a 1-hour walking distance, there was enough arable land for cultivation and it is equally likely that the pattern of land use was segmental as that it was concentric. The circular shape of an exploitation area was already discussed above (see p. 35). It is used here because that allows the estimation of resources lying at equal distance from the site. In terms of cost, it is beyond the 2 km ring where more efforts are needed to reach a certain place. Since the terrain around Galabovo is not very uneven, the increased cost beyond the second km is due to the longer distance rather than the demands of a hilly landscape. In summary, within one hour's walk from the Galabovo tell, and not necessarily in concentric areas, there was enough arable and pasture to sustain long-term site occupation. As long as the resources around the tell share, if not an even, at least a consistent distribution, it is likely that cultivation was carried out in segments around the site rather than as a continuous round strip.

Catchment area

Outlining the catchment area of the inhabitants of the Galabovo tell is based on the presence of excavated organic and non-organic remains.

considered as secret, so it is not available for the public. Today, the mouth of the Sokolitsa lies South of the town of Galabovo.

The charred fruit of *Ficus carica* marks the longest possible distance for the connections of the Galabovo inhabitants. The fig is not a native species of Bulgaria but Middle Holocene environmental conditions in the Thracian valley tolerate its secondary development in the study area. So far, figs are found on Neolithic and Bronze Age settlements in Greece (Lisitsina and Filipovitch 1980), which outlines one possible direction of the Galabovo catchement area. The opportunity for local cultivation of *Ficus carica* is also possible, as remains from that fruit have been reported from the Neolithic layers of the Karanovo tell, some 50 km North of Galabovo (Marinova 2002). In the present state of investigations, it is difficult to determine the origin of the *Ficus carica* found at Galabovo. However, until more evidence for local cultivation is provided, the possibility of short-distance (Karanovo) and/or long-distance (Greece) exchange or trade of organic products (seeds in the case of the Greek sites and fruits in the case of Karanovo) should not be excluded.

Much more certain are the contacts with the Black Sea area. In the BA layers, one example of the marine shell *Pecten* was found, which suggests occasional trips between Galabovo and the Black Sea area during the Bronze Age. It is noteworthy that one of the possible routes to the Black Sea passes by the Drama microregion (Fig. 1.1.2). Another evidence for marine contacts either with the Black Sea or the Mediterranean Sea is the *Spondylus* ornament found in M6.

The polished stone tool assemblage (n = 81) contains a wide variety of raw materials (Gaydarska 2004 : Table 5.1.15). The investigator Ph. Matchev (n.d.) concluded that the tool usage determined the type of raw material. However, the evidence suggest that there is no clear tendency to produce a certain type of tool from a particular raw material. All of the rocks mentioned in the so far unpublished report are spread around Galabovo within 10 to 50 km. There are natural exposures in the Sakar foothills, the Svetiiliiski vazvishenia (St. Ilia hills), the Manastirski vazvishenia (Monastery hills) and the Sredna Gora Mountain. The most distant are the andesites, that derive from the Sredna Gora range, about 50 km North of Galabovo. It was suggested that the andesite items were transported by river (Machev n.d., citing earlier sources). River transport has been claimed for some of the quartz tools that had traces of river rounding rather human processing.

The chipped stone tool assemblage shows a much larger catchment area than that of the polished tools. Ten types of raw materials (43 tools) have been identified in the Chalcolithic assemblage (Gatsov, n.d.). No cores were found but the flakes were derived from cores in an advanced stage of exploitation. It was suggested that the flint production process had happened outside the settlement (Gatsov, n.d.). Where this may have taken place and the possible raw material source were not pointed out. However, in a study of the flint assemblage of a site at 35-40 km South West of Galabovo, a local source of raw material was tentatively suggested (Gatsov, 1997) that was specified on the basis of mineralogical analysis of the tools to be in the Eastern Rhodopes (Kurchatov and Stanimirova 1997). Such statement is a general breakthrough in the late prehistory of lithic studies in Bulgaria. So far there are few special investigations on later prehistoric lithic assemblages and their possible sources (exceptions are Sirakov & Tsonev 1995, 2001) and it is a common practice to relate finished tools to raw material sources in North East Bulgaria or to an unknown source.

A similar uncertainty is also the case for the BA flint assemblage. Twelve types of raw material have been identified (n = 93 tools) that, on the basis of parallels with other sites, were claimed to derive from North Bulgaria or from unknown sources. However, some more targeted suggestions were made for the possible local raw material sources. So far, more than 30 exposures of Si_2O are known in the Eastern Rhodopes Palaeogene depression. Although not very abundant in quantity, they show a wide diversity of quality and types of raw material, mainly jasper, jet, chalcedony and quartzite. An exposure of jasper was also found in the Sredna Gora range. Among the 49 blades, 10 flakes, 32 retouched tools, one blade in preparation and one small chip, there were specimens made of material with not very good technological properties that make the finished tools rougher than the specimens produced from the high-quality North Bulgarian flint. It was suggested that, despite the low technological properties of the local raw material, it was used because of its relatively easy access. It was also suggested on the basis of the low presence of production waste (one blade in preparation and one small chip) that the main flint processing took place off-tell (Zlateva-Uzunova, 2003).

In summary, the flint source catchment covers a huge area of 150-180 km to the North, crossing the Stara Planina Mountain range and about 100 km to the South. The Galabovo evidence supports the idea of long-distance contacts that most probably involved long-distance specialists, especially for crossing the Stara Planina mountain range. A general discussion of the distribution of flints in the study area will be made in Chapter 8.

5.1.4. Summary and discussion

The data from Galabovo tell are too inconsistent for a precise contextual, socio-economic and material culture study. The variety of evidence and some repeating patterns, however, provide a good basis for a general reconstruction of prehistoric life on one of the tells in the study region.

Tell Galabovo was located in a fertile area with a variety of natural resources (raw materials, minerals, vegetation

cover, etc.). The long-lasting occupation (LCA-MBA) suggests that cultivation and exploitation of these resources was not devastating to the local environment and that there were enough organic and non-organic supplies to support a balanced agro-pastoral economy aided by some hunting and gathering activity.

The tell was relatively far from the other sites in the study region and not visible from any of them. It was, however, on the interfluve of two valley routes and contained strong evidence for short- and long-distance supply through exchange and/or trade.

Not all of the evidence on the tell represents deliberate activity, i.e. accidental fires or pottery breakage have probably taken place. Some outdoor activities and natural processes (e.g. house M7/8-N7/8 from the 13th building horizon) may have contributed to the depositional pattern discovered on the Galabovo tell. However, a striking continuity of social practices was observed throughout the whole occupational sequence of the Galabovo tell. Even in the present limited investigated area (in relation to the total tell area), there is repeated evidence for burnt houses, structured deposition in pits and foundation offerings, as well as personal and lineage enchainment through fragmentation. All of these social practices are implicit for the general concept of living on a tell, in which the link with the ancestors is a major motivation of social reproduction. In some cases, the possible search for ancestral identity is reinforced by building new houses directly over the destruction deposits of the preceding dwellings.

5.2. Obrutchishte flat site

5.2.1 Earlier studies and present condition of the data

The flat Neolithic settlement near Obrutchishte was excavated in the early 1970s but has never been properly published. The site is briefly described in a general article on the character of the Karanovo IV culture (Dimitrov 1971). Recently, the site was included in the study of the Maritsa-Iztok settlement pattern but without the provision of any new data (Leshtakov et al. 2001). During my museum study period, it was not possible to access the archaeological material from Obrutchishte. However, the site is considered in the current research, as it provides important evidence for human occupation at the end of the Neolithic. Although the archaeological features at Obrutchishte cannot be discussed, the landscape aspects of the site can be investigated. The evidence for Late Neolithic occupation near Obrutchishte should not be omitted, because, despite the paucity of data, the site is an important indicator of settlement diversity. In a landscape of "growing" tells (Klisselika and Mednikarovo), the foundation of a new settlement raises the question of its possible relation to the earlier and/or contemporary sites within the study region. Also a crucial point is the abandonment of the site and, in particular, why it did not develop into a tell. According to the present condition of the data, the answers to these questions can be explored only from the landscape perspective of the site.

5.2.2 The site and its surroundings according to the GIS analyses

According to the publication, the settlement was located on a high terrace 1.5km South East of the village of Obrutchishte in the locality "Selishteto" (the settlement). Precise co-ordinates have not been given, leading to the imposition of a random choice of possible site locations within the "Selishteto" area. A point has been chosen roughly in the middle of the "Selishteto" locality, whose area is not more than 30 ha. The maximum size of the site is 1ha (Dimitrov 1976). A second point 500m South East of the first one (at the very edge of the locality) was considered as another possible site location. A parallel set of GIS analyses was performed for both of the site 'locations' and the results do not differ significantly. The analyses presented here are valid for the first site location and comments are made when they do not match the results from the second site location.

The flat site of Obrutchishte is located on a high terrace (140-164 masl) of the river Sokolitsa (CDFig.51). It is on a 1-2^0 slope (CDFig.52) with a Southwestern aspect (CDFig.53). The same elevation is shared by the second place but it is on a flat surface with a Northeastern aspect. The general visibility from the site is mainly over the Sokolitsa valley (CDFig.54). The sloping terraces North of the valley are visible, with a less patchy view from the second location. Of all the Neolithic sites, only Klisselika tell could be seen from both possible locations. The distance between the two sites is over 11 km. Such a long-distance landscape and site visibility from a static point appears in other cases as well (e.g. Gudgova mogila) but its feasibility may be questioned. Generally speaking, such long-distance visibility is possible, as shown by my own field-walking experience in other research projects. However, in the case of Maritsa Iztok, the pattern cannot be tested due to the degree of present landscape devastation.

The cost surface analysis based on slope shows that, despite the longer distance to tell Klisselika, in terms of cost, similar efforts are needed to reach both Klisselika and Mednikarovo – the two Neolithic sites in the South part of the study area (CDFig.55). The route network derived from cost surface analysis consists of three paths (CDFig.56). The South routes to Klisselika (CDFig.57) and Mednikarovo tell (CDFig.58) join the major South route from Galabovo tell to Gudgova tell, discussed in detail in Appendix A, p. 197. Since the former is earlier then the latter and both routes derive from a different cost surface source, I should suggest that this repetition of road tracks is an important evidence for the existence of such a route in the later prehistory of Maritsa Iztok. The same track match is valid for the major North route that

connects Galabovo with Ovcharitsa II. The Neolithic route (CDFig.59) from Obrutchishte to Ovcharitsa II (the only Neolithic site in the Northern part of the study area) crosses the study area from South to North, then turns North East and roughly 4 km North East of Galabovo tell joins the main North route.

Visibility from the path between Obrutchishte and Mednikarovo tell is over the Sokolitsa valley, while the route is along the valley itself (CDFig.60). Most of the areas North of the valley, including the Klisselika tell, are also visible, as are the hills South of Mednikarovo.

The visibility from the path Obrutchishte – Klisselika tell should not be discussed, as in fact it forms part of the South route (see p. 197) and hence shares the same visibility. The route to Ovcharitsa II also is not going to be discussed further, since it crosses the contemporary mining areas and should produce a biased viewshed. The visibility from the point in which the path joins the North route has been discussed in Appendix A, p.197-198. The paths and their visibility from/to Obrutchishte and the remaining 24 sites is not discussed in the text because a) the site is with uncertain location and, b) there is no evidence that the site was visible after its abandonment (i.e. during the Chalcolithic and Bronze Age).

Resources and land use

The site catchment analysis for Obrutchishte settlement was applied using a circle of 5 km radius. The soil distribution in Table 5.2.1 is given for 10 successive rings of 500m radius around the first site location. Since the second site location remains within the first circle, any soil distribution analysis will "move" by 500m to the South East. Despite some quantitative differences, significant differences in the soil variety and distribution are very unlikely. Therefore, soil distribution analysis was made just for the site location in the middle of the locality "Selishteto" (CDFig.61). Table 5.2.1 does not include areas that are now contemporary settlements, as well as areas that fall outside the study region. The last three columns show the recent anthropogenic impact on the natural soil distribution. As long as the latter is not possible to reconstruct, the figures in the last three columns were not taken into consideration in SCA estimations. Although their resources were not investigated, these areas should provide some opportunities for additional resources and land use diversification.

Distance from site	Smolnitsa	Meadow	Cinnomonic	Artificial soil	Initial pedogenesis	No soil
0-500m	48ha	12ha	20ha	-	-	
500-1000m	114ha	63ha	19ha	5ha	5ha	
1000-1500m	185ha	45ha	24ha	49ha	21ha	
1500-2000m	214ha	68ha	72ha	75ha	53ha	
2000-2500m	259ha	75ha	109ha	53ha	155ha	
2500-3000m	285ha	108ha	151ha	143ha	145ha	
3000-3500m	318ha	105ha	148ha	73ha	180ha	2ha
3500-4000m	103ha	163ha	188ha	10ha	13ha	100ha
4000-4500m	85ha	138ha	108ha	6ha	122ha	189ha
4500-5000m	87ha	170ha	136ha	15ha	78ha	256ha

Table 5.2.1 Soil distribution around the Obrutchishte flat site

Exploitation area

Following the population estimation algorithm performed for the Galabovo tell, the results for the Obrutchishte settlement fall within the range of 125 (according to Russell) and 168 (according to Todorova). The annual crop needed to feed such a number of people is 26,250 – 35,280kg. For an annual yield of 200kg/ha, that gives a figure of 131 – 176 ha of arable land.

As in the Galabovo case, the very first circle around the site is assumed to be used mostly for animal pasture.

The soil distribution pattern around Obrutchishte shown in Table 5.2.1 follows a trend of successive increase and dominance of the heavy smolnitsa soil up to 3,500m in radius from the site. There is a tendency for an increase in the quantity of available meadow and cinnomonic forest soil as well but their extent falls well below that of the smolnitsa spread. Two models of possible land use were explored. In the first one, it is assumed that the smolnitsa was too heavy to cultivate in the Neolithic (cf. Dennell & Webley 1975) and hence the areas with smolnitsa distribution were excluded from the estimation of exploitation areas. The second one assumes the existence of high-effort but high-yield cultivation for which the right conditions for successful breaking of the smolnitsa are vital, viz., the ground is softened after rain in the previous day (Chapman, pers. comm.).

In the first model, only meadow and cinnomonic forest soils are considered as possible arable land. According to the data from Table 5.2.1, the area from 500m to 2000m in radius from the site contains the necessary amount of arable land, if the areas with the cinnomonic forest soil were fully deforested and one third of all the possible cultivation area was left for fallow. To avoid such an

extreme claim for deforestation –given the complete lack of pollen data- another 500m was added as a possible exploitation area. Within an area of 500-2,500m radius from the site, there were enough resources for a dynamic agro-pastoral strategy of fallow/arable land rotation and some forest clearance for both arable and browse land.

In the second model, such a balanced land use with broadly equal proportions of arable, fallow and browse without any severe deforestation is possible within an area 500-1,500m radius from the site. In the first model, a successful subsistence strategy was possible while exploring areas relatively far from the site - up to 2500m but still within 1 hour's walk. In the second model, the available resources were much closer to the site – up to 1,500m from the site but only in the case of successful labour management of arable production.

5.2.3 Summary and discussion

It would be unhelpful to give definitive interpretations of the abandonment of the site based on an unsuccessful subsistence strategy before checking similar situations with the other sites. It is hard to see that any over-reliance on the high-effort cultivation of smonitsas could have led to anything but a transfer of attention to the lower-risk cinnomonic forest soils and meadow soils, rather than site abandonment. It is suggested that social rather than direct pedological reasons (e.g., lineage fission, high dispute levels) may have been responsible for site abandonment prior to tell formation.

5.3 Atanasivanova mogila (barrow) site

5.3.1 Earlier studies and present condition of the data

Atanasivanova mogila is located 2.5 km North East of the village of Mednikarovo. The toponym of the site is a self-evident argument for the general perception and concept of these mound-like landscape features. Such a common-sense acceptance that this is a burial monument initiated the excavation of the site in 1987 (Borisov n.d.b). The feature was 72m long along the North-South axis and probably of similar length along the East-West axis (the latter was destroyed by construction works). It was at least 8 m high (the height was not specified) and contained just one burial. The grave was on the North East edge of the mound, 32m from its centre. The deceased was buried in a pit no more than 80cm from the present surface of the mound. The lack of any grave goods prevented any chronological attribution for this burial. The unsuspected paucity of graves in such a big mound (there is a barrow in Maritsa Iztok that is smaller than Atanasivanova mogila and contains 36 graves: (see p. 133-134) raised the question about the character of this feature. After a consultation with the mining geologist, it became apparent that Atanasivanova mogila is, in fact, a mud volcano (see p. 46 and Fig.4.1.4).

A grave in a prominent landscape feature immediately provokes the question of the perception of the feature at the time of the burial. Was it considered as a natural (a low hill) or a cultural (ancestral mound) feature? Did the participants in the burial process make the "mistake" of the modern farmers and experienced archaeologists – the former calling the hill "mogila", the latter excavating it, misled by their professional background ? The answers to these questions is the reason to include Atanasivanova mogila in the present study, despite its uncertain chronology. Performing a set of landscape GIS analysis, I would argue that it is highly probable that the burial in Atanasivanova mogila can be dated to the beginning, or during the course, of the EBA.

5.3.2 The site and its surroundings according to the GIS analysis

Atanasivanova mogila is located on a river terrace at 115 - 140 masl (CDFig.62). It is on a 12^0 slope (CDFig.63) with a North Eastern aspect (CDFig.64). The visibility from the site is mainly to the North and South East, with restricted views to the South West (CDFig.65). The Iskritsa pit site and Gudgova tell are visible from the site. Ten meters were added to the actual terrain model surface in order to reconstruct the height of the 'barrow', as well as some additional height that may have been swept away by past or present human activity. The visibility (CDFig.66) from the site with the additional 10 m is about 4 km West along the valley of the river Sokolitsa; roughly 2 km around the site; and a denser view to the North of the valley in comparison to the previous patchy Northern views In addition to the previously visible sites, one can now see the Klisselika tell. In both viewsheds, the special visual status of the Iskritsa dwelling site is confirmed here as well.

The cost surface analysis (CDFig.67) resulted in the following sites distribution (Table 5.3.1).

In summary, the least effort is needed to reach the sites along the valley located to the East, as well as Mednikarovo tell, situated South of the Sokolitsa valley. These sites are also some of the earliest in the study area. It is interesting that Galabovo tell is in the second group of cost strips, although it is also along the same Sokolitsa valley.

The logistics network derived from the cost surface analysis matches the path system of Galabovo in the layout of the two main routes (CDFig.68). Atanasivanova mogila is situated on the main South route of the Maritsa Iztok study region and the differences with the previous route network are in the tracks to Mednikarovo tell, MIBC, Manchova, Kurdova and Taniokoleva barrows and Barrow 4. Viewshed analyses were run only for the new paths. For details of routes from/to Atanasivanova mogila, see Appendix A, p. 199 – 200.

N of cost strip	Sites located in the cost strip
0	Iskritsa dwelling site, Iskritsa pit site, Klisselika, Gudgova and Mednikarovo tells
1	Obrutchishte flat site, MIBC, KMBC
2	Taniokoleva mogila 2-4, Kurdova mogila, Galabovo tell
3	Tcherniova mogila – all locations, Goliama Detelina flat site, Taniokoleva mogila 1, Manchova mogila,
4	Goliamata, Malkata and Ovchartsi barrows, Barrow 4
5	Polski Gradets tell
6	Ovcharitsa I and II, Gonova and Aldinova barrows, Polski Gradets pit site

Table 5.3.1 Site distribution around Atanasivanova mogila

The paths to the sites located North of Atanasivanova mogila have shown the advantages of GIS applications in archaeological studies. There are eight barrows and one flat site relatively evenly distributed North of Atanasivanova mogila. An oversimplified and schematic site distribution map would plot the sites at an absolute distance from each other in a straight Northwesterly direction. Most probably one would assume that the link between the sites was such a hypothetical straight route from South to North (if the movement was from Atanasivanova mogila to the northern sites, and respectively from north to the south if the travel was in the other direction). In fact, the GIS cost path shows a completely different pattern, in which the paths to four of the barrows and the flat site follow the main South route Westwards before crossing the study area from South to North West through the modern mining areas and joining the main North route 4km North East of Galabovo Despite the probable bias of the actual outlines of this route as it crosses an area of destroyed landscape, the direction and the track of the path are against the common-sense assumption that paths between sites always follow the principle of least distance. In terms of efficiency, it is sometimes better to walk along longer distance but on relatively even terrain, rather than along short distance but hiking over steep hills. The same pattern appears in other case studies as well (e.g., Klisselika tell – Ovcharitsa II), which confirms the validity of such a pattern.

The paths to the other four barrows indeed cross the study region from South to North, thus confirming that the neglect of a direct route can also be inappropriate. Rather, the logistics between sites should be based on both the landscape and archaeological data.

In summary, the paths to the three barrows that cross the study region from South to North present a visibility pattern in which the movement from the Sokolitsa valley to the North revealed all the earlier and contemporary sites, as well as a large number of barrows located in the Northern part of the study region. If Atanasivanova mogila was formalised as a mortuary place at the end of the Copper Age/ or the beginning of the Bronze Age, it is likely that some of the barrow locations may have been chosen in respect to their visual status from the path to/from Atanasivanova mogila. A direction of movement from North to South would have happened after the beginning of the Bronze Age; in that case, the visibility over the earlier sites and only one contemporary site (Gudgova tell) in the Sokolitsa valley may have had some importance.

The pattern of site visibility is very similar from the paths to the other sites in the Northern part of the study area, although there is a huge difference in the routes chosen and their landscape visibility[6]. This confirms the possibility of deliberate barrow location in respect to their visibility from the paths, as well as the importance of visual contact with earlier sites while walking across the landscape.

5.3.3 Summary and discussion

According to the results of the GIS analyses, Atanasivanova mogila was located along one of the main routes used in the later prehistory of the Maritsa Iztok study area. The volcano was there prior to any human occupation but its mound-like shape gained some specific cultural meaning, most probably after the end of the Chalcolithic. At the beginning of the BA, the Maritsa Iztok study area consisted of one mature tell (Klisselika) and four "growing" tells (Galabovo, Gudgova mogila, Polski Gradets and Mednikarovo). There were also at least two barrows – Gonova mogila and Goliamata mogila. In a landscape of mound-like cultural features and with an already established concept of a formal mortuary domain, a prominent hill silhouette that dominates the local landscape provides an excellent opportunity for incorporating the feature in the system of landscape communication. The act of burial within a feature that is strongly reminiscent of an ancestral tell place, while at the same time resembling a formalized funerary arena could be seen as a deliberate act of relating the newly dead to the (potential) ancestors and in the same time emphasizing the status of the deceased,

[6] The paths Atanasivanova mogila – Northern sites join the main North route. Therefore they share the site visibility already discussed in the Galabovo case study (see p. 197 - 199) and are not discussed in Atanasivanova case study.

which gives him/her "the right" to be buried under a barrow. The appearance of barrows in Maritsa Iztok will be discussed in Chapter 8; here, it is noteworthy that, although not a "real" barrow, the Atanasivanova mogila site is a burial place that very much resembles a barrow visually and therefore it is considered as such in the current study.

It is also likely that Atanasivanova mogila burial was made during the course of the EBA, when even more barrows had appeared. In such a case, the idea of imitating barrow burial is additionally supported by the presence of conceptualized mortuary places that are standing as powerful social landmarks, and thus stimulating the negotiation of social reproduction between the living inhabitants of the landscape. The position of the body - back extended with slightly contracted legs, gathered feet and knees - does not contradict an early date within the EBA for this burial. Parallels for this body position in the Maritsa Iztok area are known from Goliamata mogila. The lack of grave goods is also not an exception in the study area (e.g. Aldinova mogila). Recently, a date was suggested for the Atanasivanova mogila burial in the late Roman period (Borisov and Ivanova, in prep.). Given the current condition of the data, the authors, however, are cautious in insisting on such a late date.

In summary, Atanasivanova mogila site is a "natural" place that contains the remains of a "cultural" practice. The modern perception of the site as a "cultural" feature was later opposed by its "natural" character but the evidence suggests that such division was most probably not valid at the time of the burial. Whether the mound was natural or not was not particularly significant, as long as the mound containing the burial served its role in the social re-definition of the landscape. Being at an important place within the logistics network of late prehistoric Maritsa Iztok, Atanasivanova mogila was fairly easily incorporated into the social landscape.

5.4 Mednikarovo tell

5.4.1 General information and earlier studies

The site of Mednikarovo entered the archaeological record in 1987, after the autumn field survey of the Maritsa Iztok Expedition and was then assigned as a tell. At that time, the Eastern part of the site was destroyed by a channel and its Western periphery by road construction (AFig. 5.4.1A, B). Six years later, a Bulgarian-American team undertook sondage excavations of the site, leading to an alternative view of the site. At present, the site is considered as a flat settlement (Nikolov 1998). It is situated on a small 5m-high hilltop that, after years of cultivation, resembled a tell-like settlement mound. The rare reference to the site (investigation results are not published yet) refer to the height of the site as both 2m and 3 m. Setting Mednikarovo within its contemporary Neolithic landscape, I should argue that it is a tell-like site, which did not develop into a mature tell but which, at the same time, was not an exceptional settlement type at the time of its existence.

The excavation consisted of a step-like trench consisting of 5 successive sondage units. Each sondage was oriented North - South and measured 12m long and 2m wide. Between the sondages, 25cm-wide control profiles were left. An additional trench, measuring 3.60 to 2.90m, was excavated in the South West part of the hill that is currently the edge of a high terrace overlooking the Karapelitska stream. The type and size of the trenches were chosen in consideration of contemporary agriculture ploughing of the whole site and according to the aims of the investigation: to establish the stratigraphy and chronology of the tell (AFig. 5.4.1B, Gaydarska 2004 : AFig. 5.4.2). In the excavated area of 130m^2, five successive layers were recognised on the basis of changes in the soil colour and texture (AFig. 5.4.1C, D). Four different niveaux were distinguished in layer 4 and two niveaux in layer 3. Within layers 1 (arable land) and 5, archaeological features were not found and layer 2 contained five pits.

The general stratigraphy of the tell and the relationship between contemporary features are not available for Mednikarovo, as the site is still unpublished. On the basis of the pottery found during the excavations, two Neolithic occupational phases were recognised – the final stages of the Early Neolithic (Proto-Karanovo III) and the final stages of the Middle Neolithic (Karanovo III-IV) (Nikolov 1998). Chalcolithic and BA sherds and vessels were also found but without any clear stratigraphic context (Leshtakov et al.2001).

Archaeological evidence

During my museum study in 2000, I was given full access to the excavated archaeological material and all the available site documentation in Bulgarian. I was able to look at 1/10th of all the material - mostly pottery. Unfortunately, it was impossible to relate the information from the storage unit records written by the American team to the stratigraphic units recorded in the Bulgarian field documentation. For example, the former contained many more archaeological contexts than were summarised in the final site report. The following description of the archaeological sequence and features contains only data that can be validated by at least two sources (e.g. the site report and the site documentation or the site documentation and the storage units).

Sondages 2 and 3 were the only two zones with *in situ* remains. The earliest occupation of Mednikarovo was identified in sondage 3, where house rubble was excavated (Gaydarska 2004 : AFig. 5.4.2H). Details of the construction and plan of the dwelling were not given. Early Neolithic sherds were the only finds within the restricted excavated area. The next occupation was identified in the same sondage after a levelling layer of

light-brown soil, mixed with burnt daub/house rubble and sherds. A dwelling floor of beaten clay, 1.25m in length and 5-7cm in thickness, and a posthole were excavated. Not many sherds were discovered and none of them had any chronological significance.

The following occupation was securely dated to the Late Neolithic and was marked by a burnt dwelling floor. The latter was made of beaten clay and measured 2.27m in length, 15cm in width and 5cm in thickness. The floor was disturbed by a pit from a later occupation. Most of the dwelling floor and the pit fell within an un-excavated area. The excavated part of the pit contained single sherds and dark-brown soil, very similar to the surrounding layer 2. Within the same Late Neolithic layer (Karanovo III-IV) but 71cm above the dwelling in sondage 3, another area of house debris was found in sondage 2. A dwelling floor of beaten clay 5-7cm in thickness and with a preserved size of 3.5m by 2m was excavated. No sherds and traces of fire were mentioned to be present. The base of a rectangular oven was also found. The floor and the oven were covered by a layer of burnt house debris. Sondage 2 contained 4 more pits, dug from different depths within layer 2 (AFig. 5.4.1D). According to AFig. 5.4.1D, the earliest of the four pits was pit N4. It is 40cm in depth and contains single non-characteristic sherds and soil similar to the surrounding matrix from layer 2. Most probably, the next pit to be dug was N5, which was filled with dark-brown soil, burnt daub/house rubble and few sherds. Pits 1 and 2 are 50cm apart and the latter is earlier as its mouth is below the mouth of the former (Gaydarska 2004 : AFig. 5.4.2D). Pit 2 contains dark-brown soil, similar to the surrounding matrix in layer 2, a few uncharacteristic sherds and medium-sized broken stones. Pit 1 has the same characteristics as pit 2 but contains some bones and sherds (AFig. 5.4.2M-P) as well as five almost complete vessels with a secure Neolithic date (Karanovo III-IV) (AFig. 5.4.2A-E). During the course of the excavations, a human skull was noticed in the profile of a pit, that prompted an expansion of the excavated area. Two human skulls and numerous disarticulated and heavily broken human bones were found. The burials were dated to the Late Mediaeval /Pre-Modern time, as local peasants confirmed the presence of a cemetery from that period. The poor condition of the skeletons was assigned to the modern cultivation techniques but how the burials related to pit 1 remained unclear.

Layer 2 as a whole was dated to both the Neolithic (Gaydarska 2004 : AFig.5.4.4 A-P) and BA, according to the associated sherds. The exact find spots of these datable sherds were not provided. On the basis of the pit fill, I should assume that digging pits into the Neolithic layers during the Copper (single sherds found) and BA caused the sherds from these earlier occupations to become spread over the contemporary Copper/Bronze Age surfaces. Pits were filled with the surrounding soil, explaining the similarity between the pit fill and the soil matrix of the layer from which they were dug. Other finds from layer 2 comprised: 4 flint tools, a spindle-whorl, a figurine head, a fragment of bone awl, fired clay sling bullet and two net weight that according to the excavators were made from body sherds (AFig. 5.4.3K, M-O).

The pit digging practice was confirmed by evidence from sondage 6, where several inter-cutting pits were found. They contained bones, stones and sherds from the Neolithic, Copper and BA. There were rims, body parts and bases in both fine and coarse ware, fragments decorated with different techniques and patterns, whole and fragmented handles, 2 fragments of altars (AFig. 5.4.3L), 2 bone awls, 9 flint blades and one almost whole BA vessel. Given the present state of the data, it is not possible to reconstruct whether the pit-digging practice has started in the Neolithic or the Neolithic sherds derive from disturbed Neolithic layers. Chalcolithic and BA pit digging on Mednikarovo tell, however, must have been a recurrent practice.

Apart from the artefacts mentioned so far, 6 flint blades were found in layer 1 and two flint blades and three stone tools were un-stratified.

Although most of the ceramic material consists of sherds, there is a great typological diversity of shapes, pointing to some kind of intensive dwelling activity (Gaydarska 2004 : AFig. 5.4.3-5.4.6).

During my museum study, I came upon a number of stone tools that I was not able to relate to any part of the archaeological sequence described above. However, their presence should not be omitted. They are nine stones of different shapes and sizes, which, according to the excavators, were grinding stones. All of them were made of quartz and had at least one smooth/polished side. Two were visibly fragments of bigger tools. It is interesting that all of them derive from one and the same sondage but from different levels.

The uppermost layer 1 (the arable soil) contained numerous sherds with traces of heavy wear and erosion, indicating long-term surface exposure. Among the 5 kg of pottery examined in 2000, there were sherds from the Neolithic, Copper and Bronze Age and a fragment of Early Iron Age ware but most of them were very uncharacteristic. They derived mainly from sondage 1 but the chronological incoherence of layer 1 was also confirmed by the data from the site report. The sherds contained both fine and coarse ware, with rims, bases and body sherds all present. Very similar were the characteristics of the finds from sondages 4 and 5, located in the highest zone of the site. In addition, there were some animal bones, as well as fragments from wheel-made pottery, among which there were sherds from very Late Medieval/Pre-modern times. On the base of this evidence, I should suggest that, after the last Neolithic occupation, there were some short/temporary settlement activities or most likely some structured deposition, such as burials and pit-digging that, after years of intensive cultivation, were totally destroyed. Not only have the *in situ* contexts of the later occupations been destroyed but

the Neolithic layers have also suffered past and present anthropogenic intrusion.

5.4.2 Plant remains

Pollen samples have been taken from a drill core, every 20 cm up to 180 cm in depth. The number of pollen grains was 5-6 in a sample, while to be reliable they have to be 300 in a sample. However, pollen from *Chenopodiaceae, Poaceae, Compositae* and *Alnus glutinosa* was found. There is also some evidence for cereals but it was not possible to identify these to species level (Popova 2001).

5.4.3 The site and its surroundings according to the GIS analyses

Mednikarovo is located on a high terrace of the river Karapelitska, at 140-164 masl (CDFig.87). It is on a 2-3^0 slope (CDFig.88) with a South West aspect (CDFig.89). Visibility from the tell is very restricted – mainly to the areas South East and North West around the site itself and patchy spots 5 – 7 km to the North West (CDFig.90), (CDFig.90a). No sites are visible at all. The restricted visibility status of Mednikarovo appears as a trend in the viewshed analysis of the other sites and more importantly in the viewshed analysis of the paths between sites. Among the routes within the logistics network of the study area, Mednikarovo is seen only from the path Klisselika- Ovcharitsa II.

The results of the cost distance analysis (CDFig.91) and the distribution of sites within the 10 cost strips are summarised in Table 5.4.1

N of cost strip	Sites located in the cost strip
0	Atanasivanova mogila, both Iskritsa sites
1	Obrutchishte, KMBC, Klisselika and Gudgova tells, MIBC1
2	Galabovo tell, MIBC 2-4
3	Kurdova mogila, Taniokoleva mogila–all locations, Tcherniova mogila – all locations, Goliama Detelina flat site
4	Manchova, Goliamata, Malkata and Ovchartsi barrows, Barrow 4
6	Ovcharitsa I and II, Gonova and Aldinova barrows, Polski Gradets tell and Polski Gradets pit site

Table 5.4.1 Site distribution around Mednikarovo tell

During the Neolithic, Mednikarovo tell was not in immediate access to any of its possible contemporary sites. Quick and easy access to contemporary sites would have gained some importance from the beginning of the Copper Age onwards, when there was increased site density around the tell. During the Neolithic and Copper Age, there was a tendency for sites to be more easily reached than in the BA, when site accessibility was lower in cost.

The logistics network based on the Mednikarovo cost surface (CDFig.92) matches the main valley routes and the South-North routes, as discussed in the path analyses of Atanasivanova mogila (see p. 199-200). There are two segments starting from the tell – one towards the Sokolitsa valley, the other to the KMBC. The latter will be discussed in section 5.5.2. The former ascends to the North North East for 2.5 km, when it joins the main South route. The segment is a part of the path Mednikarovo tell - Atanasivanova mogila and hence shares similar visibility. Therefore, the visibility from the Mednikarovo tell paths are not going to be discussed here, since they combine the viewshed from the path Mednikarovo tell - Atanasivanova mogila and the visibility from the Atanasivanova mogila network. For further details on Mednikarovo tell logistical network, see Appendix A, p. 200.

It is noteworthy that, if the main South route was in use during the Neolithic, connecting Mednikarovo tell with Klisselika tell, it may have affected the establishment/foundation of the later sites (Atanasivanova mogila, both Iskritsa sites and MIBC2), since all of them are visible from the Copper/Bronze Age route Mednikarovo tell – Gudgova tell. This means that all the places on which later sites have emerged are visible from the Neolithic route and that may have played a role in the choice of their location. From the path that connects Mednikarovo and Ovcharitsa II during the Neolithic, Klisselika tell could be seen. The comparison of several route tracks and their visibility have confirmed that the point from which the tell was visible is South of the present mining area; hence, it is likely that such a sight-line has existed during the Neolithic. However, such a claim was not confirmed for the later sites and visibility from the path that crosses the study area through the contemporary mining area is not taken into consideration. In summary, the paths and their visual pattern from/to Mednikarovo tell repeat or confirm the observations made in the previous case studies.

Resources and land use

The size of Mednikarovo is recorded with different values in the available sources. As site size is a basic figure in building the SCA and especially the exploitation area, all the mentioned values were taken into consideration. The range of figures is summarised in Table 5.4.2.

Site area	Population number	Necessary crop	Necessary arable land
1ha	125-168	26,250 –35,280kg	131 – 176 ha
1.8ha	225-264	47,250 – 55,440kg	236 - 277 ha
2.4ha	300-336	63,000 – 70,560kg	315 - 353 ha

Table 5.4.2 Estimation of exploitation area according to different site size estimates

Exploitation area

The distribution of soils around Mednikarovo, given in Table 5.4.3, shows a clear pattern of the patchy distribution of both smolnitsa and, especially, meadow soil within an area of 1500m from the site (CDFig.106). Considering this fact, two estimations of possible exploitation area were made – one using only cinnomonic forest soil as an arable resource and one using both cinnomonic soil and smolnitsa. Meadow soil was excluded as being rare within the 500-1,500m zone.

Distance from site	Meadow soil	Cinnomonic forest soil	Smolnitsa	Artificial soil	Initial pedogenesis	No soil
0-500m	23ha	54ha	3ha	-		
500-1000m	13ha	115ha	84ha			
1000-1500m	9ha	282ha	72ha			
1500-2000m	79ha	294ha	61ha			
2000-2500m	197ha	258ha	35ha			
2500-3000m	237ha	298ha	40ha			
3000-3500m	130ha	284ha	114ha	33ha	30ha	
3500-4000m	68ha	338ha	146ha	53ha	57ha	4ha
4000-4500m	115ha	339ha	171ha	81ha	43ha	73ha
4500-5000m	80ha	311ha	259ha	90ha	32ha	124ha

Table 5.4.3 Soil distribution around tell Mednikarovo

The data in Table 5.4.3 indicates that, if the site size was 1ha, the area within 500 to 1500m from the site contains all necessary arable land. This area could also provide sufficient arable if the site size was 1.8ha but assuming total deforestation. However, since this scale of deforestation is unlikely, the exploitation area was probably up to 2000m from the site. The area within 500 - 2000 m has sufficient cinnomonic forest soil to sustain a population over 300 persons (2.4 ha site size) and still not suffer from severe deforestation. Within this area, the percentage of meadow soil increases because as the main valley of the Sokolitsa falls into the site catchment.

The model incorporating smolnitsa cultivation shows that this should have had some impact on the exploitation area only with a population size of 236-277 (1.8ha). If smolnitsa was cultivated, this would reduce the exploitation area to 1500m from the site, instead of the 2000m required for solely cinnomonic forest soil cultivation. If that was the case, this involves some high-effort agriculture because of the already discussed particularities of smolnitsa cultivation. The area 500 - 1500m contains sufficient arable land to sustain the higher population of 315 - 353 persons but assuming total deforestation. There is no evidence for such a severe process, which means that the exploitation area may well have been expanded to 2000m from the site. In practice, this is the same as if only cinnomonic forest soil was cultivated, which makes the issue of possible Neolithic cultivation of smolnitsa difficult to evaluate.

In summary, the area up to 2000m from Mednikarovo facilitates long-term and sustained mixed farming subsistence for a wide range of possible inhabitants – from 131 to 353.

5.4.3 Summary and discussion

The model of investigation applied to tell Mednikarovo does not allow conclusive claims to be made but some general comments on the deposition patterns at the site are possible.

Evidence for house burning is scattered but still gives some support for the idea of the emergence of this possible deliberate social practice. The late Neolithic house floor in sondage 3 had traces of fire but was not overlaid by burnt house rubble. If this inconsistency is a result of the type of the investigation, we can assume that there was fire *in situ* and this was a typical case of house burning. On the contrary, if the excavation situation represents a “de facto” deposit, this should mean that the burnt rubble was removed for some kind of subsequent use. One possible secondary implication of the burnt daub is for surface levelling – a case that has been documented on Mednikarovo itself. Thus, a practical issue to make the new building surface may even have integrated the social issue of successful social reproduction in which the link with the ancestors is seen through possession of a

fragment of their house. Support for such intentional use of burnt daub comes from pit 5, which contains pieces of burnt house rubble. The very intriguing situation in sondage 3 demonstrates an unburnt dwelling floor overlaid by burnt house rubble. It is possible that the floor was artificially covered by house debris in order to imitate a real house fire or that there was some specific house burning technique in which only the walls were affected. Unfortunately, given the present state of the data, no further comments are possible on the pattern of house burning at Mednikarovo. It is evident, however, that fire has played an important role at the site and, although accidental fires should not to be excluded, the use of secondary fire products points to some deliberate and managed social practice.

Another common practice on the tell is structured deposition by pit digging. There is no secure evidence that such activity has started in the Neolithic but the five Middle/Late Neolithic vessels found in pit 1 suggest that, maybe at the end of the Neolithic occupation at Mednikarovo, structured deposition in pits had already become a deliberate social practice. It continued during the Copper and BA, as confirmed by the data from sondage 6. Whether pit digging was within a settlement context or the site was some kind of a "pit-field" is difficult to establish. In any case, however, exchange with the ancestors was present – Neolithic sherds found on the BA surface and BA soil and objects in features dug into Neolithic layers. This is a rare example where "exchange" of objects between different periods can be securely demonstrated.

Deliberate fragmentation is very difficult to document on such a heavily cultivated site but there are indirect evidence suggesting pottery breakage, which was not the result of intensive ploughing. First, the vessels from pit 1 were restorable but not whole. Secondly, the surface and the edges of the majority of the sherds were so heavily worn that I should doubt this was a result of 50 years' modern ploughing. Deliberate fragmentation and re-distribution of pottery is known as "trizna" in Bulgarian archaeology (see p. 27) and it is usually connected with burial and memorial rites. If some whole vessels were able to survive after a devastating cultivation (e.g. the vessels in Pit one, that is 52 cm below the present surface, and the vessel in Sondage 6), this could mean that the sherds we find today may have been deposited as fragments in the first place and that modern ploughing has contributed to their additional fragmentation and wear. This is not to say that past and present human activity did not damage possible whole objects deposited on the tell; rather, it is to assess the evidence for possible initial deposition of fragments on the site. Apart from the sherds, direct evidence for fragmentation practice is sparse. There were just a few fragmented objects- two altars, two bone awls, two grinding stones and a weight. Although not numerous, the presence of these "useless-once-broken" objects suggests if not deliberate fragmentation then the deliberate keeping of fragments. As long as it is assumed that Mednikarovo was not a settlement during the Chalcolithic and BA (see below), it seems probable that the fragments were deliberately brought and deposited on the tell as part of a social practice of personal enchainment (Chapman 2000).

The type(s) of Copper and BA occupation on Mednikarovo should be envisaged in the context of tell formation. As stated above (see p. 27-28), the settlement dynamics and site-formation processes of Bulgarian tells have received little attention. However, general observations on the scattered data on tell stratigraphies reveal that a high proportion of multi-layer sites became mature tells during the Copper and/or Bronze Ages. At the time of the latest Neolithic occupation at Mednikarovo, there were very few tells higher than 4m in the whole of the Upper Thracian Plain (three examples are Karanovo, Klisselika and Kapitan Dimitrievo). Some of the sites during the late Neolithic shared the height of Mednikarovo (e.g. Ezero, with 2.60m), others were in the initial stage of possible tell development (e.g. Komunalni uslugi and Hlebozavoda near the town of Nova Zagora, both with 1-1.10m-thick Neolithic layers: Kunchev & Kuncheva 1988) yet never developed into a tell. Thus, the site of Mednikarovo was not an exceptional settlement type for its time and did not develop into a mature tell because of the lack of subsequent Copper and Bronze Age occupational layers. It is also possible that the height of the site was reduced by later severe destruction. Indirect evidence for such damage is the lack of any visible sign and/or features of the Late Medieval/Pre-modern cemetery. In addition, the digging of the grave pits would have contributed to the destruction of the late occupational levels of the site. The current condition of the data, however, does not support a process of the widespread removal of settlement layers. Instead, I would suggest that Mednikarovo is an "adolescent" tell that has become the focus for other types of human activities during its post-Neolithic biography. Pit-digging and/or surface deposition of pottery have taken place on Mednikarovo, thus including the site within Chalcolithic and BA social networks as a place for possible ancestral rites and rituals.

5.5 Karaivanovi mogili barrow cemetery (KMBC)

5.5.1 Earlier studies and present condition of the data

Karaivanovi mogili barrow cemetery is located cca 2.5 km South East of the present village of Mednikarovo. It consisted of three barrows but archaeological investigations were undertaken at just one of them. Despite the co-ordinated efforts of archaeologists and mining managers, two of the three barrows were destroyed by the mining work prior to their planned excavations. Half of the third barrow was also destroyed. In 1974, the remaining part of the barrow was excavated. The site was not published and the current data derives

from the written investigation report that contains no illustrations at all.

According to the report, the three barrows were 15 - 20m apart, situated in a line on the high right bank of the Karapelitska stream. South of them, on the very bank of the stream were traces of a large Classical/Roman settlement. On the left bank of the stream there were two significantly larger barrows. The concentration of sites – 5 barrows and a settlement - led the investigators to conclude that these were interrelated Roman sites belonging to one and the same complex. However, under the 4 secondary Roman cremations dug into the mound, there were two earlier graves. The latter were in the centre of the barrow and one of them was a child burial. Both skeletons were found in crouched position on their left side, with the head pointing to the West. The depth of the graves was 30 cm. from the present surface, although whether the deceased were placed in a pit or on the surface was not specified. The grave goods of the child burial comprised a spindle whorl and two fragmented jugs. The other grave contained fragments of one vessel. Stylistic parallels for the decoration of one of the jugs – incised net-like ornaments, with triangles, spirals and concentric circles - have dated the graves to the Late Bronze Age. General similarities for the pottery were found in the areas of Central and North West Bulgaria, as well as in the Tei culture of Muntenia, South East Romania.

5.5.2 The site and its surroundings according to the GIS analyses

Karaivanovi mogili barrow cemetery is located on a hill at 189-213 masl (CDFig.107). It is on a 2-3^0 slope (CDFig.108) with a South Western aspect (CDFig.109). Visibility from the site is very low, mainly to the West and South of the barrow itself (CDFig.110). There are some visible spots at 7 km and 10 km to the North West. No sites were visible at all.

A second viewshed was run with an additional 5m, as the actual height of the barrow is not known (CDFig.111). There was just one visible site – barrow 2 from the Mednikarovo-Iskritsa barrow cemetery – but the overall view has significantly increased. In addition to the previously visible areas, now there was an almost continuous panorama of a 1.7-km-wide zone North of the Sokolitsa valley.

So if the barrow was 5m high, that should have provided a good view over the landscape rather than the sites. Apart from MIBC2, a LBA site north of Gudgova tell may have also been seen, since the area North of the tell is visible. However, the presence of such a settlement is not confirmed and further comments cannot be made due to the paucity of the data.

The cost surface analysis (CDFig.112) is summarized in Table 5.5.1

N of cost strip	Sites located in the cost strip
1	Atanasivanova mogila, both Iskritsa sites, Mednikarovo, Klisselika and Gudgova tells
2	Obrutchishte, MIBC
3	Galabovo tell, Kurdova mogila, Taniokoleva mogila 2-4
4	Taniokoleva mogila 1, Tcherniova mogila – all locations, Goliama Detelina flat site, Manchova, Goliamata, Malkata and Ovchartsi barrows, Barrow 4
6	Aldinova barrow, Polski Gradets tell, Ovcharitsa I
7	Ovcharitsa II, Gonova barrow, Polski Gradets pit site

Table 5.5.1 Site distribution around KMBC

According to the cost surface analysis, KMBC and its possible contemporary sites are located in areas that need substantial efforts (a day's walk at most) to be reached. On this basis and together with the complete lack of visibility from the barrow, I should assume that KMBC was related to the areas along the valley of the Sokolitsa and the foothills of Sakar Mountain immediately to the South – a zone that falls out of the present study region. Recently, several LBA pottery scatters were reported from that area (Expeditsia Maritsa Iztok n.d.).

The route network from Karaivanovi mogili barrow cemetery is an important justification of the previous claim of a consistent repetition of routes (CDFig.113). In the case of KMBC, the routes start from the Southernmost part of the study area, leading to the main direction of movement along the North-South axis, rather then to the West-East axis, as in the most previous cases.

It is apparent from CDFig.113 that once the route descents into the Sokolitsa valley, it follows the already existing paths to the East and West. The routes to the North coincide with the tracks from Atanasivanova mogila. This is an important confirmation of the presence of a long-lasting network of tracks, in which the main routes follow the valleys and there are individual paths to/from the sites situated in some distance from the valleys. Usually but not always, the traffic trend is along the main routes. In the cases when pairs of sites - both away from the valley - should be connected (e.g. KMBC- Manchova mogila), the path between them crosses the main route and follows only the individual tracks to/from the site, respectively to/from the valley. As several cost surface case studies have shown, these individual paths share recurrent outlines despite the

different initial staring and/or destination points. Therefore, they could be considered as "secondary" routes that may have lost their importance once the destination site was abandoned. But they may also have been used as pilgrimage routes to earlier/ancestral sites by the later inhabitants of the landscape. In the case of the Karaivanovi mogili barrow cemetery, the route network shown on CDFig. 113 make sense only in the context of such sacred trips to earlier sites, since all the contemporary sites are in the Northern part of the study region and access to them is along the main North route. In order to reach the contemporary LBA sites, once in the valley one should turn left and head West and later North West to cross the contemporary mining area and to join the route 4 km to the North East of Galabovo. From this route, there are individual paths to each LBA site, whose track and visibility is discussed in the Galabovo case study.

5.5.3 Summary and discussion

KMBC is the only example of the creation of new barrows in the LBA. This may be interpreted as a deliberate attempt at the monumentalization of the place, after successful colonisation of the landscape. The site is the Southernmost of all and as the recent investigations have shown, the areas South of the study region (Sakar foothills) were mainly settled during the LBA and the IA. Another peculiarity of this barrow is the child burial and the Tei pottery found in the grave, which resembles the evidence from Grave 27 in the Drama microregion (see below, p. 163-164), which also contained a child buried with a Tei jug. It is possible that the two children were related to each other and/or to a third person. But it is also possible that a specific burial practice was followed, in which children with certain social status should be buried with exactly this type of exotic pottery. Given the present condition of the data, conclusive claims are difficult to make but such similarity constitutes strong evidence that, during the LBA, the people living in the study microregions were in contact with each other, as well as with more remote areas.

5.6 Iskritsa flat site

5.6.1 General information and earlier studies

In 1988, during the spring field survey of the Maritsa-Iztok Expedition, scattered prehistoric pottery was found over an area of 0.15ha near the contemporary village of Iskritsa. The site was located on the left bank of the river Sokolitsa, on three neighbouring low hills (AFig. 5.6.1a). Later in 1988, four sondages were excavated on the Easternmost hill, which had the densest Medieval and prehistoric pottery spread (Borisov 1989). In the next year, excavations were continued on the other two hills, where a Medieval settlement, fortress and cemetery were found. The place was also occupied during the Iron Age (Sheileva 1994). Investigations on the Eastern hill were renewed in 1992, when three new trenches were laid out near the previous sondages. Burnt rubble and two floor levels were found during the excavation that made investigators interpret the feature as a house (Leshtakov n.d.b). On the Westernmost hill, among the Medieval graves, at least 10 prehistoric pits were excavated (Sheileva 1994). Thus, the current interpretation of the prehistoric site near Iskritsa is that it consists of two sites - an Early Chalcolithic pit site (Iskritsa I) and a Late Chalcolithic settlement site (Iskritsa II) (Leshtakov et al. 2001). The end of the settlement was connected to the eruption of a mud volcano. On the basis of the results of my own research on the data from Iskritsa, I would dispute both of these claims.

Archaeological evidence

The following site description summarises the prehistoric data from all excavations at the site, as well as the results from my museum study in 2000.

At the so-called Iskritsa II site, two pits and a burnt house were excavated. The surrounding general cultural layer consisted of sand, gravel, clay, burnt house rubble, charcoal and pieces of daub. Two fragments of cult vessels, 14 flint tools – three from the surface, 11 from different depths and locations in the trenches (Gaydarska 2004 : AFig. 5.6.8), a small adze (Gaydarska 2004 : AFig. 5.6.5 I), a fragment of a bone needle and a complete small dish (Gaydarska 2004 : AFig. 5.6.5 K) were discovered during the excavations. Sherds (Gaydarska 2004 : AFig. 5.6.6-7), a bovine skull, fragments and whole animal bones, such as long bones, ribs, vertebrae and jaws, complete the contents of the cultural layer.

The dwelling contained two occupational levels, each marked by beaten clay floors. Three postholes were also found. Burnt house rubble was spread all over the area of the sondages. The stratigraphy of the burnt feature was not coherent. In the Eastern part of the structure, the two floors and the rubble were relatively intact, having "sunk" into a fault and were covered by clay and gravel (AFig. 5.6.2a). The West side of the feature was severely folded and, all around it, there were traces of long-lasting surface exposure. Some of the house rubble in the fault was not fully fired.

Two almost simultaneous activities were given as an explanation for this unusual stratigraphy. Together, or soon after the burning of the house, the mud-volcano erupted and opened a fault into which the East side of the dwelling had sunk, while the West part left on the surface and was subsequently folded. The clay and gravel from the eruption sealed the floors and the plasters in the fault, thus preventing them from complete combustion (Leshtakov n.d.b.).

Two pits were found in the vicinity of the house. The first one contained two bovine skulls, one on the bottom, and

the other 10cm from the top of the pit. The lower jaw was missing from the latter, which had a large piece of charcoal placed on the forehead. The pit was filled with crumbly black soil, mixed with sherds and a few animal bones.

The second pit was filled with reddish sand and gravel, without any finds.

The occupation of the Iskritsa II site in the Late Copper Age was claimed on the basis of the sherds found on and above the dwelling floor (Leshtakov et al. 2000:18)(AFig. 5.6.2; Gaydarska 2004 : AFig. 5.6.5a).

During my museum study, I looked at 3 out of the 13 kg of pottery from the burnt house. It contained more Late Chalcolithic than Early Chalcolithic sherds of both fine and coarse ware. There were two vessels that had more than 20 fragments of their rim and body but were still not complete.

The Early Chalcolithic "Iskritsa I" site was 200 m to the West, on the Westernmost hill. Among the Mediaeval graves, there were up to 10 pits with prehistoric material, mainly concentrated in the North part of the hill (AFig. 5.6.2b).

Pit N10 was disturbed by a Medieval grave. It was 90 cm in diameter and 35 cm in depth. The bottom of the pit contained a thick, compact clay soil, mixed with lots of charcoal and very few sherds. This layer was covered by 10 cm of black gray crumbly soil, mixed with charcoal and decayed wall daub or ceramics, that have coloured the earth with scattered red spots. The small amount of sherds from the pit was claimed to be uncharacteristic but generally assigned to the Copper Age.

Pit N12 was 1m in depth and with a diameter of 1.80/1.70m. It was filled with black-gray compact soil, mixed with small pebbles, small pieces of burnt daub, sherds and animal bones.

The bottoms and sides of pits N 15 and 18 are carefully plastered with clay. On the bottom of pit N 15, there was a thin strip of ash and charcoal over which there were spread broken vessels. They were covered by a brown-yellow soil mixed with lots of sand. The latter was overlaid with a 1-mm strip of ash and charcoal, with prehistoric sherds on top of them. The sequence finishes with a 0.30 m-thick grey-whitish soil with both tiny and large pieces of burnt clay. The pit is cylindrical in shape with an upper diameter of 0.67 m and a depth of 0.55 m.

Pit N 18 was piriform with an upper diameter of 0.83m and a basal diameter of 0.90m. Its depth is 0.65 m in the West part and 0.60m in the rest of the pit because of the displacement of the terrain. The sequence in the pit started with yellow clay containing lots of charcoal. This was covered by a 0.10m-thick layer of sandy soil. The uppermost 0.22m-thick layer was grey –whitish in colour, with lots of tiny charcoal fragments and pieces of burnt clay. Among the sherds, two restorable but incomplete vessels were found. Two fragments of flint tools were also excavated.

The oily black-grey clay layer with lots of charcoal and single sherds at the bottom of the pit N 11 was interpreted as a possible pit plastering. Above it, there was a 0.15-0.28m-thick black-grey crumbly layer, containing numerous animal bones and sherds. The pit was cylindrical in shape, with an upper diameter of 1.20m and a depth of 0.36m. An adze, a fragment of a flint tool and sherds of three restorable vessels were found.

Pits N 20 and 21 were oval in plan and with uneven bottoms due to the displacement of the terrain. Pit N 20 had an upper diameter of 1.30 to 1.90m and was filled with red-brown compact soil with burnt daub and charcoal. Several boulders were found at different levels in the pit, as well as upper and lower parts of grinding stones. There were also a few sherds and animal bones.

The fill of pit N 21 (diameter - 1.35/1.22 m) was the same as pit N 20, but some pebbles were present, too. A few sherds and animal bones were found as well.

Pit N4 contained sherds of pottery that belong to one technological group (N. Todorova, n.d.). The fabric was very sandy with three kinds of filler - lots of mica, rare fine organic material and tiny pieces of ochre. The pottery was not very well fired and had sporadic traces of self-slip. Long-distance parallels in the Cucuteni-Tripolye area, the Aegean and Anatolia were claimed for the vessels and they were dated to the very end of the Late Copper Age (Todorova, N. n.d.).

These observations are important since they are not valid for the content of the other pits. Pit N4 appears to be an exception, as all the remaining pits contain both coarse and fine ware and a variety of decoration patterns and shapes. This suggests the deposition of similar materials in several pits, with special, fine and different pottery in others.

An important note in Todorova's study of pit N4 concerned the surface of the sherds. They confirmed my own observations on the material from pit Nos. 15, 16, 18 and 21. The sherds from these pits were very heavily worn on both their outer and inner sides, as well as on the cross-section. Todorova suggested that this was maybe due to the post–excavation washing. Since, I found unworn (but not unwashed !) Medieval sherds among the extremely worn fragments from pit N 16, I would rather conclude that the prehistoric sherds were exposed to the open air for a long time and then deliberately re-used as a component of the pit fill.

The content of the other pits (Nos 15, 18 and 21) did not conform to such a hypothesis, since there were many heavily worn non-characteristic fragments and just one or two sherds from each pit with secure evidence for prehistoric date. This was the case with pit N15 that was claimed to contain many sherds dating to the Early

Copper Age. When I studied the material, I could find just one sherd of clearly Early Chalcolithic date (AFig. 5.6.3B); the other 74 small pieces of fine ware and 10 rims were absolutely unsuitable for dating.

The content of the pits was not published by context and their ECA chronology is based on the very few published vessels and sherds with typical Early Chalcolithic (viz., Maritsa) decoration (AFig. 5.6.3A).

The stratigraphic sequence as described in the excavation diary, which lacks plans and sections, does not show severe disturbance of the pits and I should suggest that some of them were dug and filled during the Copper Age (e.g., N4 and N15). Others date from the Medieval occupation, when earlier pottery was dug out during the digging of grave pits (e.g., N16).

5.6.2 Plant remains

The archaeo- botanical study of 178 plant impressions on burnt house rubble has identified 94 samples of einkorn, 45 samples of emmer, 38 of hulled barley and one sample of vetch (Popova 1994).

5.6.3 The site and its surroundings according to GIS analysis

Both parts of the Iskritsa site are located on a terrace with a $1\text{-}2^0$ (CDFig.124), at 115-140 masl (CDFig.125). The pit zone has a North Western aspect, the dwelling zone a Northern aspect (CDFig.126). The viewshed analyses of both zones show different patterns. They share a similar patchy view over the Northern parts of the valley but, from the pit zone, the area South of the zone is visible as well (CDFig.127). All the sites in the valley are visible from the pit zone except for the dwelling zone. Both tells located in the Eastern part of the Sokolitsa valley are visible from the dwelling zone (CDFig.128).

The cost surface analyses of both Iskritsa sites were almost identical (CDFig.129), (CDFig.130) and are united in Table 5.6.1:

N of cost strip	Sites located in the cost strip
0	Atanasivanova mogila, both Iskritsa sites, Mednikarovo, Klisselika and Gudgova tells
1	Obrutchishte, MIBC , KMBC
2	Galabovo tell, Kurdova mogila, Taniokoleva mogila 2-4
3	Taniokoleva mogila 1, Tcherniova mogila – all locations, Goliama Detelina flat site, Manchova barrow,
4	Goliamata, Malkata and Ovchartsi barrows, Barrow 4
6	Aldinova barrow, Polski Gradets tell, Ovcharitsa I and II, Gonova barrow
7	Polski Gradets pit site

Table 5.6.1 Site distribution around Iskritsa

The site was located in an area with easy access to the earlier Neolithic sites and in addition, one of them (Klisselika tell) was even visible from both Iskritsa sites. The interrelation of the Copper Age sites along the Sokolitsa valley, in terms of cost, was also fairly quick accessibility. There was one exception – tell Galabovo needed more efforts to be reached. Tell Polski Gradets in the Northern part of the study region required a half-day trip to access the site.

Logistic networks from both sites coincide due to the similar cost surfaces (CDFig.131) (CDFig.132). There is a minor difference in the paths to Goliamata and Malkata barrows (see p. 207). In general, the route network of both Iskritsa sites matches the KMBC logistical network. There are, however, some differences – the path to Mednikarovo tell is the same as from Atanasivanova mogila, there is one path to MIBC1/ 2 and another to MIBC3/4 (see p. 209), the above mentioned path to Goliamata mogila, the path to Kurdova mogila (see p. 208) but the most significant difference is the path to Polski Gradets tell.

Both Iskritsa sites are on the main South route, so the paths between the sites in the valley and their visibility are discussed in Galabovo and Gudgova tell case studies.

The recurrent invisibility of the Iskritsa dwelling site from most of the paths and/or sites followed a certain pattern - not visible from paths leading to the Southern (Mednikarovo, KMBC) and the Western (Galabovo, Atanasivanova mogila) areas. The dwelling zone was only visible from the path to/from Klisselika and Gudgova tells. Summing up the evidence from the paths along the valley (already discussed in the previous sections or forthcoming), it is possible to say that a part of the site was visible from the West and South only when approached at close distance, while there were no visibility restrictions from the East and the North.

5.6.4 Summary and discussion

Summarizing the above evidence, it is likely that feasting, the breaking and deposition of pottery (trizna) and structured deposition in pits was a common social practice at Iskritsa, just as at Mednikarovo. Pit deposition most probably started during the Early Copper Age and the consumption and/or deposition of “ritual” food may

have accompanied the event. The same activity was continued during the following centuries. In addition, the surface deposition of pottery fragments was practised and a building for deposition was constructed. One possible reason for the emergence of the building may be the deliberate monumentalization of the place, in which cultural inscription onto the landscape is accomplished through the erection of a positive feature in contrast to the negative features distributed on the site (the pits). Thus a specific entity is created in which the ancestors (the pits), the present occupants (the surface deposition) and the descendants (the building remains survive even the death of its builders) are harmonized in the eternal landscape.

The place on which the building was constructed was specially chosen to be visible only for people in the close vicinity of the site. I would agree with the late Chalcolithic chronology of the building, as long as two floor renovations and a 1m-thick cultural layer are more likely to be a result of a few hundred years of human activity (within the Late Chalcolithic), rather than a millennia (during the whole Copper Age). The presence of Early Copper Age pottery (AFig. 5.6.4) in the burnt rubble suggests a long-lasting ancestor cult, in which personal, household or communal enchainment with the previous inhabitants of the landscape was crucial for successful social reproduction. It is likely that ECA sherds were deposited on the surface and/or in pits below or under the place where the building was erected, which later were deposited in the ready building. But it is also possible that the Early Chalcolithic sherds were kept at settlement sites and deliberately brought and deposited at Iskritsa during the Late Copper Age. In both cases the link with the ancestors appears to be an important issue during the Late Chalcolithic.

The end of the building was not a result of devastating natural process but rather an intentional and managed burning of the feature. The presence of unburnt together with burnt rubble in one and the same *in situ* context is strong evidence for managed fire. I should also suggest that the house was deliberately burnt as part of a rite of passage, in which "killing" (burning the old house) is followed by re-birth (the construction of a new house). Indirect evidence for such a cycle is the renovation of the floors of the burnt feature. Given the present state of the data, it not possible to explore the character of this internal transition of the building. After the managed fire event, the building was not re-built because of the eruption of the mud volcano. The latter was not necessarily a rapid and devastating process (see above p. 114) and therefore probably did not cause the house destruction. What it prevented, however, was the subsequent occupation of the site. The next traces of human activity are from the end of the Bronze Age onwards.

The evidence from the pit zone has revealed that the latest inhabitants (AD IX-XIIth centuries) treated the earlier material carefully and with consideration. In spite of the controversial data, it could be inferred that there were intact prehistoric pits (N4), prehistoric pits with subsequent disturbance (N10, 18) and post-prehistoric pits containing prehistoric material (N16).

The long-lasting occupation and site formation of Iskritsa is oversimplified by following a currently favourable "continuity" explanation (see above, p. 56). As already discussed, "continuity" is both the reason for, and an explanation of, recurrent long-term site occupation. In addition, the lack of formal or commonly agreed definition for prehistoric settlement led to the interpretation of the evidence from Iskritsa as the result of settlement activities on the basis of one single burnt house. Observations on the pottery sherds from Iskritsa during my museum study and in particular, on deposition patterns at both Iskritsa sites, were crucial for the reconstruction of the site dynamics of foundation, abandonment and re-occupation.

During all the investigation seasons (1988-1994), a total of almost 8ha was excavated. A single prehistoric house was found on the Eastern hill only, as the area around the house was surveyed but not excavated. The lack of any other prehistoric buildings was taken to reflect limited excavation and/or later destruction (Leshtakov n.d.b). I would challenge both conclusions. First, within the 8 ha investigated area traces of prehistoric occupation were found, which has the following implications – a) if there were prehistoric house rubble, it should be noted during field-walking as well as excavation; and b) pits should not be separated from the social practices leading to deposition on the Eastern hill. Secondly, if a 1m thick layer can survive a mud-volcanic eruption and subsequent Medieval and Modern destruction, then any other prehistoric settlement activity (presumably 1m thick), if present at all, should have left similar traces. Therefore, I would assume that the prehistoric site at Iskritsa consisted of one building and several pits. Such a combination of features is not considered to be typical for Bulgarian prehistoric sites and I would suggest that Iskritsa was *a place* with special meaning, for the enactment of significant social practices.

Both Iskritsa sites contain evidence for such practices, which are usually named as non-utilitarian or sacred. According to their understanding in current studies (Brück 2000; Brück and Goodman 1999), these are elements of contemporary *habitus* in which the very act of fragment deposition, pit digging or house burning emphasises some current social issue(s) but at the same time is indivisible from the long-term attitude of reverence for *their place* and *their ancestors*. Return journeys to the place where once the ancestors have started the practice of surface and pit deposition add value to the place. In turn, the place constitutes additional specific meanings for any activity held on it, thus providing an area for (re) negotiation of social issues, for pilgrimage, worship and devotion. The reason for the initial choice of this particular place is difficult to reconstruct. However, an assumption for the possible attraction of the place could be made on the basis of past

and present environmental phenomena in Maritsa Iztok. The river Sokolitsa is well known for the coal seam in the profile of its banks. Some of them were still visible around Iskritsa even a few years ago. A characteristic feature of the coal in Maritsa Iztok is their spontaneous bursting at the very moment of the first surface exposure when they come into contact with oxygen. This is not a devastating process, usually producing with slow-burning embers and smoke (pers. comm. P. Karacholov). So it is likely such spontaneous mini-eruptions took place near Iskritsa when communities have already inhabited the landscape along the Sokolitsa valley. Indeed, the toponym "Iskritsa" is a diminutive form of "Iskra", which means "sparkle". The illumination effects and the smoke may have attracted people's attention and, after the active process has stopped, the place where the natural phenomenon had happened became a sacred place. As with Atanasivanova mogila (see above, p. 192 -197), the visual properties which attracted people to this place were transformed into a cultural statement.

5.7 Klisselika tell

5.7.1. Earlier studies and present condition of the data

The tell of Klisselika is located immediately North of the modern village of Mudrets (AFig. 5.7.1a). It was firstly investigated in the early 1970s, when M. Dimitrov made some soundings/trenches in order to establish the stratigraphy and chronology of the site. The results of these excavations have never been published and the archaeological material that was found has restricted public access. Prior to the Maritsa-Iztok expedition, it was known that the site was founded in the Early Neolithic, most probably was abandoned some time in the Early Copper Age and re-used during the Medieval times when it was turned into a cemetery. In the late 1950s, the South end of the tell was cut by agricultural "amelioration" work. As a result, the present bed of the river Sokolitsa passes through the site, thus forming a "natural" profile of the archaeological sequence. In 1998, the investigation of the tell was renewed and its aim was to clarify the stratigraphy and chronology of the tell using the earlier archaeological profiles, as well as the site exposure left after the amelioration work. Adverse weather conditions and restricted funding prevented the team from finding and documenting *in situ* remains and only the chronological aim was partly met. It was confirmed that the site occupation has started during the Early Neolithic (Karanovo I); four occupational levels were claimed to be present at the approximate depths of 2.50-2.70m from the top of the tell. The total height of the tell is not mentioned in any of the reports or publication of the site. My own observations (without any surveying equipment) made me conclude that the levels of pebbles overlain by white clay and interpreted as dwelling floors by their excavators are at the depth of 4.50 - 5m below the top of the tell. The uppermost 2.50 - 2.70m were most probably occupied during the Middle and Late Neolithic and Early Copper age, as unstratified sherds are known which date to these periods (AFig. 5.7.2 D, E; Gaydarska 2004 : AFig. 5.7.4 - 5).

The main field technique used during the new investigation was a control profile along the exposure cut by the river. The profile was 7m long and 2m deep. It is difficult to evaluate the amount of soil that was removed to clear the profile but the layer of humus removed from the tell was 10-15 cm thick. During my museum study in 2000, I was able to count 758 body sherds, 87 fragments of rims and 106 fragments of bases from the total excavated area of 10-14m^2. They confirmed the above stated chronology and derived from both fine and coarse ware (AFig. 5.7.1b, AFig. 5.7.2A-C, F-J, AFig. 5.7.3). In 10 out of over 100 storage units (plastic bags), it was possible to identify fragments from one and the same vessel, which however did not make a complete vessel. Five pieces of daub were also found during the new investigations. Burnt daub was found during the field survey on the opposite bank of the river, which was supposed to belong to the tell area prior to the moving of the riverbed. Sherds and bones are the other finds across the surveyed area, which now suffers from long-lasting and intensive cultivation. The museum storage bags contained several pottery objects that had traces of a large quantity of organic material (most probably straw) in the clay fabric. As they were not whole, it is difficult to assume their function but the shape suggests some kind of weights (loom and/or net). Another 6 kg of pottery sherds was also excavated during the renewed investigations. Over 500 animal bones or fragments of animal bones derive from this relatively small excavated area. Together with my observations from other tell excavations where animal bones were not found with such frequency, the latter suggests that the excavated area was some specific area for depositing food remains, including animal bones. However, given the present state of investigations, conclusive claims cannot possibly be made.

The last finds class to be mentioned in this short section on the archaeological evidence from Klisselika tell are the stone tools. Special investigations have not been undertaken and claims for the kind of raw material, as well as the tool types, are made according to the general knowledge of the team members. Fifteen flint artefacts altogether were discovered during the recent excavations. Nine of them were called tools, four were plunging blades, one scraper and a core. The latter, in fact, was a black opal core. During my museum study, I found a further 57 pieces of opal deriving from the tell. They were of different colours, mainly black, and of varying shape, size and stage of erosion. Another five quartz tools are present in the museum storage units, as well as three tools of an unknown type of stone. Eight flint flakes, one tool, 5 plunging blades and a fragment of a translucent flint tool complete the assemblage. It was claimed that opal was used for tool production instead of flint, as the former was abundant within the study area, in contrast to the availability of the latter (Leshtakov et al. 2001).

Indeed, such a concentration of opal tools and raw materials is an important indicator for the potential use of this mineral as a flint substitute.

5.7.2 Plant remains

Archaeo-botanical study of the charred macrofossils and plant impressions has revealed that the main cultivated species at Klisselika tell were *T. dicoccocum* and peas (Popova 1985). A detailed list of species and the context within which the plant remains were found have not been provided.

5.7.3 The site and its surroundings according to the GIS analyses

Tell Klisselika is located on a terrace at 140-164 masl (CDFig.135), most probably close to a palaeo-channel of the river Sokolitsa. It is on a $1\text{-}2^0$ slope (CDFig.136) with a Southern aspect (CDFig.137). The actual size of the site is difficult to establish due to various past and present destructions, that is why some approximate estimations were done pointing that the tell was not higher then 10m and its area varies between 1 - 1.56ha.

Visibility from the site is very good over the immediate surroundings within a 1 - 1.5 km radius (CDFig.138). Only to the North West of the tell was the visibility patchy and generally not very good. The same patchy view is valid for the area 8-9km to the West along the valley. The neighbouring Gudgova tell is visible from the site but since the former is later than Klisselika tell, the intervisibility was most probably important in the foundation of the first settlement of Gudgova tell. Both Iskritsa sites are visible from Klisselika but such visibility would have started to be an issue in the final stages of the tell occupation (early Chalcolithic), when the pits and the buildings at Iskritsa were built.

Ten meters were added to the terrain model surface of the site that should correspond to the height of a mature tell. Viewshed analysis run with this additional height shows the same general visibility over the valley but is less patchy in comparison to the first viewshed analysis (CDFig.139). The panorama over the surrounds of the site is much better, reaching almost 3km to the South, South East and East but still does not exceed 1.4km to the North. MIBC2 became visible and, as in the Gudgova tell case it may have some importance in terms of intervisibility, when the barrow was founded, since the latter did not existed during the time of Klisselika habitation.

Cost distance analysis (CDFig.140) shows that equal efforts were needed to reach the two Neolithic sites along the Sokolitsa valley - Mednikarovo tell and Obrutchishte flat site (first cost strip), while the other Neolithic site – Ovcharitsa II, located in the Northern part of the study region (7^{th} cost strip) could be reached only after a day's journey. The long sequence of the Klisselika tell bears traces of habitation during the Middle and Late Neolithic, to which periods the other three sites were dated. Whether or not the sites were occupied contemporaneously is difficult to say at the present state of the investigation.

The distribution of sites intensifies during the Copper Age, as some sites are situated in area with quick access to Klisselika tell (both Iskritsa sites), despite the continuous pattern of dispersed location – Galabovo tell in the second cost strip and Polski Gradets tell in the 5^{th} cost strip. The chronology of the Polski Gradets tell will be discussed in section 5.9.1 but it is noteworthy that its Neolithic date and hence a possible connection with Klisselika tell should not be excluded.

The route network repeats the already discussed main routes along the two river valleys (CDFig.141) (CDFig.142). The route that connects Klisselika tell with Ovcharitsa II is one of the examples demonstrated and discussed earlier for the GIS ability to identify least-cost rather than least-distance routes. The path follows the main South route to the East, crosses the study area to join the North route 4 km South East of Galabovo tell and then follows the route until it reaches Ovcharitsa II. A common sense logistic analysis that does not use the GIS tool should outline a route that goes due North regardless of the landscape particularities (CDFig.143).

There is one path whose use during the Neolithic is feasible but not sure – the path to Polski Gradets tell (CDFig.144). It generally the same path that connects the tell with both Iskritsa sites but instead of starting to the East from the Iskritsa site, it starts from Klisselika to the West, following the main South route for 1.3 km before reaching the point at which the path ascends to the North. The landscape and site visibility is the same as from the Iskritsa path, which confirms the claim for the possible choice of places for site locations with regards to their visibility from earlier paths (CDFig.145).

The visibility along the main South route between Klisselika and the sites in the valley is almost identical to the visibility from Gudgova tell (a few more visible areas around Gudgova tell from the paths from the latter, see p. 201-202).

The panorama from the path Klisselika - Ovcharitsa II shares first the visibility from the main South route and then the visibility from the main North route (CDFig.146). Tell Mednikarovo is visible from the path, which, together with the data form section 5.4.2, draws to the conclusion that, within the Neolithic route network, there was almost complete site intervisibility (except for Obrutchishte) from the routes connecting the Southern and Northern parts of the study area.

Resources and land use

The SCA for the Klisselika tell follows the pattern of the previous sites. Distribution of soil types around the site given in Table 5.7.1. and CDFig.147 shows that meadow

and especially smolnitsa soils are spots within a consistent spread of cinnomonic forest soil. Smolnitsa soil is excluded from the following analysis of the exploitation area, since its distribution in the first three circles is insignificant and whether or not the areas were exploited does not influence the final figures for site exploitation area.

Distance from site	Meadow	Smolnitsa	Cinnomonic
0-500m	35ha	5ha	-
500-1000m	77ha	39ha	62ha
1000-1500m	113ha	34ha	237ha
1500-2000m	85ha	101ha	362ha
2000-2500m	92ha	161ha	451ha
2500-3000m	100ha	154ha	606ha
3000-3500m	81ha	116ha	812ha
3500-4000m	55ha	155ha	711ha
4000-4500m	99ha	120ha	770ha
4500-5000m	117ha	131ha	760ha

Table 5.7.1 Soil distribution around tell Klisselika

Exploitation area

The site population was difficult to estimate given the imprecise data on site area. For that reason, a range of values was used to generate a reasonable suite of estimates. If the site area was 1ha, the population should vary between 125 and 168 (following Russell 1956 and Todorova et al. 1983). If the site area was 1.56ha, the number of people should vary between 195 and 264. In the first case, between 26,250 kg and 35,280kg of annual grain crop was needed to meet dietary requirements, requiring the cultivation of between 131 and 176ha of arable land. For the second case, the figures are 40,950 to 55,440 kg of annual crop, requiring 205 to 277ha of arable land.

Following the pattern of the previous studies, the first 0.5-km circle around the site is excluded from the arable land estimations. As Table 5.7.1 shows that, within an area of 500 to 1500m around the site, there was enough potential arable land to meet dietary requirements for the full range of population estimates. In the case of the lower values (131-176 ha), even just the meadow soil was enough to produce the necessary amount of grain. However, the patchy distribution of meadow soil, as well as the need for fallow land, especially in the case of long-term exploitation as required by tell populations, suggest the joint use of meadow and cinnomonic forest soils in a segmented pattern of cultivation with shifting fallow/arable land. In the case of the higher values (205-277ha), there is still enough arable land within a 1.5km radius but only 49ha are left free of any cultivation. This figure suggests very intensive deforestation in order to free the closer areas of cinnomonic forest soil. As long as there is no direct evidence to support such site-oriented forest clearance, I would suggest that a larger area was incorporated within the Klisselika site exploitation area. Another 500m-radius circle around the site provides a sufficiently large area of additional cinnomonic forest soil, facilitating a more flexible pattern of forest clearance, not necessarily concentrated in rings around the site. Indirect evidence for the minor impact of forest clearance may come from the absence of severe erosion, which not only let the Klisselika inhabitants remain on the tell for centuries but also facilitated the foundation of a new settlement 1km North East of the first one. To summarise, the area between 500-2000m from the site contains enough arable and browse land to sustain a long-term agro-pastoral subsistence strategy of fallow/arable land rotation, as well as some natural vegetation comprising forest, bushes and shrubs.

Catchment area

The evidence for the wider catchment area of tell Klisselika is sparse. A *Spondylus* bracelet found during the later excavations points to contacts with the Black Sea coast more than 100 km to the East. At a closer distance of 1 to 10 km are opal and quartz deposits, which may have, been exploited by the site inhabitants. Antler tools betoken hunting activity and prey accessibility should not have exceeded 10 km, as there was no severe deforestation around tell Klisselika in the Neolithic and Copper Age.

5.7.4 Summary and discussion

Although the evidence from Klisselika tell is somewhat inconsistent and sparse, the full range of social practices, subsistence strategies, local production and exchange directions are recognisable that were more fully developed in the later periods.

The scatters of burnt daub suggest secondary use of daub and the possibility of the controlled use of fire. So far, evidence for massive fires has not been reported. Structured deposition can be suggested on the basis of the

unusually dense deposition of bones and unconfirmed presence of one pit[7]. The claim for fragmentation practices is supported by the evidence that there were vessels with matching sherds, which did not make a complete vessel.

The subsistence of Klisselika tell occupants was most probably mixed farming, with cultivation, stock-breeding, hunting and gathering. Some crop rotation is presumable on the basis of the patchy soil distribution. The antler tools point to some hunting activity.

The relatively large number of chipped stone artefacts and local raw materials suggest the exploitation of local source(s) and on-site production of flint tools. Exotic artefacts in the excavated data are limited to *Spondylus*, indicating participation in an extended exchange network.

5.8. Gudgova tell

5.8.1 General information and earlier studies

The site of Gudgova (also known as Mudrets I) was excavated for the first time in 1973, when two 40 x 10m trenches were laid out in the central and the Southern parts of the tell and excavated to bedrock. The results of the excavations carried by M. Dimitrov have not been published and the materials from the tell have restricted access in the museum storerooms of the Stara Zagora Historical Museum. The only available stratigraphic information for these early excavations is Parzinger's (1993:114) mention of a 3m-thick Early Chalcolithic layer and a 1.60m-thick Late Chalcolithic layer, with no mention of any BA deposits at all. Investigations were renewed in 1992-1994 and, for a very short time, in 1998 by the team of the Maritsa Iztok Expedition. The aim of the new excavations was to clarify the stratigraphy and chronology of the tell, as well as to put the site in a broad palaeo-environmental and settlement context (Leshtakov 1995). During the new investigations, the old profiles were cleaned but sterile ground was not reached (AFig.5.8.1A). The BA layer was established to be 2 - 2.20m in thickness, the Late Chalcolithic more than 2.50m in thickness, comprising 17 building horizons, and the initial occupational sequence was found to be 2.50 - 3m in thickness, dating to the Early Chalcolithic (Leshtakov et al. 2001).

Archaeological evidence

During the renewed excavations, sterile ground was not reached, so no evidence for the initial occupation of the tell is known. Archaeological material from the Early Copper Age has not been found either[8]. Eleven building horizons were found after the cleaning of the North profile of the central trench, with six more in the West profile. Very few comments were made on the Chalcolithic stratigraphy. It was claimed that the 17 building horizons are rebuildings of the settlement area, not just reconstructions of existing dwellings (Leshtakov et al. 2001). Nine of the 17 Late Copper Age horizons are defined by house floors, while the remaining eight occupational layers were identified on the basis of beaten clay levels. House burning, feature overlaying and later destruction of Late Copper Age structures are among the very few details known about the Late Copper Age occupation at Gudgova tell (Gaydarska 2004 : 223).

The Bronze Age occupational levels appeared in the North profile as two different layers. The first one, immediately overlying the hiatus, is black-grey and consists of at least two horizons. Initially the layers were dated to the earliest stage of the EBA - Ezero A (Leshtakov n.d.b). In the final publication of the tell chronology, this stage was not mentioned and the date of the next BA layer - EBA3 - was accepted as valid for the whole Bronze Age occupation (Leshtakov et al. 2001). The two BA layers were not divided by a hiatus and the upper one is brown –ochre in colour, consisting of at least four horizons.

The investigations in 1992 included the cleaning of the profiles of the old trenches and two new 5 x 5m sondages. Parts of four dwellings were discovered, related to the II - IVth building horizons of the upper BA layer (AFig. 5.8.2). In 1993, a 5 x 5m grid was established on the same orientation as the sondages of the 1970s excavations (Gaydarska 2004 : AFig. 5.8.1b) and an area of 250m^2 was excavated. The following season, the investigated area was enlarged to 650m^2. A consistent vertical and horizontal stratigraphy of the whole excavated area has not been provided. During my study, I encountered great difficulties in interrelating features in coherent vertical and horizontal units, that made me suggest possible reasons for the lack of general plans related to the stratigraphic sequence of the tell. First, the early investigations have devastated the site in two ways – not only cutting into the thick cultural layer but also heaping the excavated soil around the mound. Secondly, the financial restrictions of the investigations determined a specific field technique (cleaning profiles and limited excavated surfaces) that failed to clarify the stratigraphy of the upper layers, now additionally damaged by contemporary cultivation. Nonetheless, the investigators themselves confessed that it was not relevant to relate absolute depths from the top of the tell to any consistent building horizon (Leshtakov n.d.c), although such an attempt was made in the various site reports. However, in the absence of a formal horizontal and vertical sequence,

[7] During my museum study, I came upon a single mention of pits at Klisselika but no further comments were made.

[8] There are claims for the existence of Early Copper Age occupation that however are not supported by any published material.

the available evidence proved insufficient to reconstruct such a sequence. This is the reason why the description of the site is organised not according to its stratigraphical progression from earlier settlements and features to later occupational stages but in terms of the evidence for building features, artefacts and social practices.

Building features

A complex of three houses was excavated in squares M19/Q19. Only their Southern parts were preserved, the Northern parts being destroyed by one of the 1970s trenches (AFig. 5.8.1B). Postholes and beaten clay floors were found but no trace of any oven or hearth. It was suggested that the houses were built on a North - South orientation, with two rooms and an area of over 50m^2 (Leshtakov n.d.c). A complex pattern of construction, destruction, re-building and house burning is documented by the seven dwellings found altogether in four Early Bronze Age horizons (Leshtakov et al. 2001 : 20). Some related details are discussed in Gaydarska (2004 : 224).

Artefacts

Chipped stone assemblage

The chipped stone assemblage from Gudgova tell has not been consistently investigated. The Copper Age tools (Gaydarska 2004 : AFig. 5.8.11) were not studied and the information from the inventory books for 111 whole and 91 fragments of flint artefacts was not related to the study of the BA assemblage (Gaydarska 2004 : AFig. 5.8.17). The latter consists of 186 artefacts, identified as two cores, 16 flakes, 78 retouched tools, 54 blades, 27 small chips, 1 natural piece, 1 repairing flake, 3 flakes from preparation (re-working debitage) and 4 amorphous fragments. Thirteen types of raw material were recognised, with sources similar to those of the Galabovo lithic assemblage. In addition to the exposures mentioned there, the possible sources of two types of raw materials were located in the area around the Chirpan hills, some 100km to the North West. Primary and secondary production of the flint tools was presumed to have taken place outside the tell (Zlateva –Uzunova, 2003). Such conclusions do not correspond to the excavator's claim for on-site flint production on the basis of the presence of one flake in the house in square P18 (Leshtakov n.d.c). Unclear aspects include the presence of the two cores (Gaydarska 2004 : AFig. 5.8.17A) and their relation to the opal pieces mentioned in the petrographic study and the opal debitage recorded in the field diary. Last but not least, comments have not been made on the possible link between the opal source 1km to the North West of Gudgova tell (pers. comm. P. Karacholov) and the opal pieces from the tell. Given the present condition of the data, conclusive claims cannot be made but, on the basis of presence of small flakes/debitage, 2 cores, one repairing flake, a natural piece and several amorphous pieces, as well as the proximity of the opal source, I would suggest that some form of chipped stone production was practiced on or near the tell.

Pottery

The renewed investigations have produced a huge amount of archaeological material that is very selectively and sparsely published. A representative selection of artefacts combining published and unpublished material is presented in Gaydarska (2004 : AFigs. 5.8.5-19), aiming to illustrate the typical range of objects, shapes, decoration and use of raw material in the Late Copper and Early Bronze Ages in Thrace (AFig. 5.8.3-5.8.5). During the early excavations, only the whole and restorable vessels were collected, while fragments from non- restorable vessels were secondarily re-deposited on the tell. In 1994, one such "depot" was re-excavated in squares N13-P13, where a pile of Late Chalcolithic sherds yielded fragments from at least 200 vessels (Stoyanov n.d.). They were from both fine and coarse ware and with different shapes and patterns of decoration (Gaydarska 2004 : AFig. 5.8.8). Another 20 fragmented (Gaydarska 2004 : AFig.5.8.5E, H-N; AFig.5.8.7A-F, H, J) and two whole vessels were published that derive from the cleaning of the profile (AFig. 5.8.3A, B) (Leshtakov et al. 2001). Their actual quantity is much bigger but not known because of the specific Bulgarian recording standards[9]. The same uncertainty is valid for the BA pottery as well.

Other artefacts

Apart from the whole and fragmented vessels, a large quantity of artefacts was collected during the renewed investigations. The type and number of artefacts are summarised in Table 5.8.1.

[9] In Bulgarian excavation technique, pottery is not usually weighed. During the museum study, it was not possible to evaluate the amount of the pottery excavated during the late investigations. However, it is sure that it is more than 25 storage units, with sizes 54/22/25cm (0.7 cu. m.).

Type	Whole	Fragmented	In preparation	Total
Chipped stone tools(flint and 4 from opal)	111	91	-	202
Polished stone tools	34	36	1	71
Bone/horn/antler tools	35	23	N /a	58
Gold pendants	2	-	-	2
Clay whorls	53	21	3	77
Clay weights*	64	26	7	97
Clay altars	-	4	-	4
Clay lids	4**	1	-	5
Clay figurines	-	5	-	5
Clay strainers	1	1	-	2
Models of wheel	2	2	N /a	4
Sling bullets	1	-	-	1
Clay reels	2	-	-	2
Clay funnels	1	1	-	2

Table 5.8.1 Type and number of artefacts from tell Gudgova

* At least 12 of them are surely net weights.

** One is claimed to represent an oven.

Social practices

Burning houses

The main stratigraphic profile of the tell in the central 1973 trench shows evidence for burning in both the Chalcolithic and BA layers but not along the whole profile (AFig. 5.8.1A). Apart from the three dwellings explicitly mentioned to be burned, there was more evidence for fire found on the tell. The information derives from the field documentation and was not properly incorporated in the final interpretation of the site. Chalcolithic fires appear to be present in two cases – in N. Todorova's (n.d.) study of the Copper Age stratigraphy but without a section; and in square R18, where the soil excavated in the 1970s contained a huge amount of burnt clay. BA burning of houses could be traced in squares M18, M19, M20, L20, where compact areas of burnt rubble were found. In L20 under the rubble, there was a layer containing spots of ash and charcoal. In squares N20, M20, M19, N19, O19, the soil was full of fragments of burnt daub. Therefore, it is likely that some of the fire products not explicitly connected to the above-discussed built features - but found within the same or neighbouring squares - were in fact related to the burning of the houses. It is also likely that there were subsequent fire events as the two house complexes are found generally one after another in one and the same squares M19-P19. The presence of areas of compact rubble suggests a massive *in situ* fire but the data from the central profile (AFig. 5.8.1A, AFig. 5.8.2) show no evidence of totally devastating fires covering the whole site.

Hence, I should assume that burning of individual BA houses at the Gudgova tell was a deliberate and controlled process. The secondary use of daub is difficult to investigate, given the present condition of the data. In addition, the long-term modern cultivation of the tell has destroyed to a great extent the *in situ* surface situation. The only formal comment on the tell's burnt houses is for a continuous and peaceful re-occupation despite the burning of the buildings! The arguments were that the dwellings were empty of any house inventory and the house plans of later phases were superimposed upon earlier building plans. Evidence for the repeating house layouts were not provided, nor were any causes for the fires (Leshtakov et.al. 2001). However, the data from Gudgova tell confirm the observations from previously discussed sites for the controlled firing of individual structures.

Structured deposition

Structured deposition in pits was explicitly commented on in two cases. The first case is a pit in M19, probably belonging to the last occupational BA level, that has destroyed parts of two previous horizons. The pit was 60 cm deep and 120cm in diameter, filled with gray-black soil and fragments of pithos. No interpretation or relation to some of the other excavated features was presented.

The second case was in P18, in which a pit from the IInd BA horizon was cut into a pit from the III^{d} BA horizon. The earlier pit was interpeteted as rubbish dump because it contained charcoal, layers of ashes, fragments of animal bones and a few sherds, as well as having a location 40 -50 cm from a house. The later pit consisted of domestic and wild animal bones deposited in a 20-cm-thick layer of crumbly gray soil, among which cattle and red deer bones were recognised (Gaydarska 2004 : AFig. 5.8.4b). Apart from the few sherds found among the bones, a funnel[10] was deposited very close to the pit

[10] In the site diary, the only funnel is mentioned as a find in the pit but the inventory book contains two more artefacts claimed to be found in the same pit, that are shown in Gaydarska 2004 : AFig. 5.8.4 A, C.

mouth (Gaydarska 2004 : AFig.5.8.4B). The funnel was accepted as a symbol of dairy production and its final deposition made investigators infer ritual deposition (Leshtakov n.d.d)

One more feature type reveals a certain deposition pattern, which is not common and puzzled the investigators. These are clay-made features with white clay plastered floors and walls from 5 to 7cm high (Gaydarska 2004 : AFig. 5.8.4a). The features have an entrance and were interpreted as grain-driers. In one of the features, animal bones were found, while, in general, they were filled with gray-black crumbly soil.

Fragmentation

Probably the most striking example of fragmentation practice comprises the LCA sherds (Gaydarska 2004 : AFig. 5.8.8) from more than 200 vessels found in the secondary "depot" during 1994 (Stoyanov n.d.). Whether or not there were matching sherds distributed on the tell or on the surrounding sites is not possible to conclude in the present state of the investigations. The data from table 5.8.1, however, shows a high percentage of broken objects on the tell, which, combined with the evidence for the LCA sherds, suggests that deliberate fragmentation was practised on Gudgova tell. The pieces of broken objects may have been kept on the tell as a resource for personal enchainment through objects or may have been brought onto the tell as a result of such practices (Chapman 2000).

5.8.2 Plant remains

Chalcolithic

Eleven samples were processed by flotation from the Late Copper Age occupation levels. In general, they contained only single grains and only two samples provided a more consistent pattern. The first one, from a house context, contained barley, vetch and lentils. The other sample, from a pottery scatter context, contained *T. dicoccum*, *T. compactum* and *T. spelta*. The last is a rare species in prehistoric times in the Balkan Peninsula (Popova 2001). The distribution of botanical remains from both Copper and Bronze Age contexts is summarised in Table 5.8.2.

Twenty-five samples of carbonised wood have also been studied (n = 206 fragments). Ten tree taxa have been identified – oak, elm, maple, hornbeam, alder, birch, hazel and some unidentified fruit species.

Bronze Age

Ten samples were processed for flotation from the BA occupation layers. The data is summarised in Table 5.8.2. Two of them are of particular interest. One sample, from a house floor, contained einkorn, barley, millet, lentils, vetch and vetchling. The most frequent plant is vetch (53%). Cornel, orach and fat hen were also present. The other sample contained a large quantity of acorns, cornelian cherry stones and 23 whole (?) carbonised plums. Other gathered species included elder and grape pips. Six weed species were identified, of which four were more widespread – *Chenopodium album*, *Polygonum aviculare*, *Galium aparine and Brassica compestra* Samples of carbonised wood from a dwelling floor in O19/P19 have been studied. They showed the use of oak, elm, maple, hornbeam and mountain ash in house construction.

The past vegetation around the Gudgova tell was interpreted as a deciduous oak forest with some hazel, alder and birch growing alongside the rivers. Forest clearance was also suggested to have taken place, as elm and maple appeared in both Chalcolithic and BA samples, on which basis they were accepted as perennial species. These species like sunlight and clay soils and are characteristics for forest clearings (Popova 2001).

5.8.3 The site and its surroundings according to the GIS analysis

The site was located 800m North of the left bank of the river Sokolitsa. It is on a $1\text{-}2^0$ slope (CDFig.148) with a South West aspect (CDFig.149), at 152 masl (CDFig.150). The visibility from the site is very limited. It is mainly over the area 1.5km South of the tell and some spots to the West along the North part of the valley (CDFig.151). There is a more consistent visible area at 9.3-10.7 km to the West, roughly before the Obrutchishte site. All the sites in the valley are visible, while only Atanasivanova mogila is on the edge of a visible/invisible area. The panorama over the immediate area around the tell improves when 8m were added onto the surface that correspond to the height of the mature tell (CDFig.152). The visibility from the mature tell is consistent around the site and in particular better in comparison to the previous viewshed to the areas North and North East of the tell. The general visibility over the valley to the West is less patchy and has the same long-distance visible spot near Obrutchishte. All the sites in the valley are visible and Atanasivanova mogila is in the visible area. This means that Atanasivanova mogila became visible with the "growing" of the Gudgova tell.

The cost surface analyses (CDFig.153) and the site distribution are summarised in Table 5.8.3.

Species	Chalcolithic	Bronze Age
T. monococcum	+	+
T. dicoccum	+	+
T. compactum	+	-
T. spelta	+	-
Hordeum vulgare	+	+
Hordeum vulgare var. nudum	-	+
Panicum miliaceum	-	+
Lens culinaris	+	+
Vicia ervilia	+	+
Lathyrus sp.	-	+

Table 5.8.2 Plant remains from Gudgova tell

N of cost strip	Sites located in the cost strip
0	Atanasivanova mogila, both Iskritsa sites, Klisselika tell
1	MIBC, KMBC, Mednikarovo tell
2	Obrutchishte
3	Galabovo tell, Kurdova mogila, Taniokoleva mogila – all locations, Tcherniova mogila – all locations
4	Manchova, Goliamata, Malkata and Ovchartsi barrows, Barrow 4, Goliama Detelina flat site
6	Aldinova barrow, Polski Gradets tell
7	Polski Gradets pit site, Ovcharitsa I and II, Gonova barrow

Table 5.8.3 Site distribution around Gudgova tell

The interrelation between Gudgova tell and its possible contemporary sites shows a dynamic pattern in terms of cost. In both the Chalcolithic and the BA, there were sites with relatively easy access and sites that were at a substantial cost distance. Therefore, the location of Gudgova tell could be interpreted as a deliberate choice in consideration of the previous (e.g. tell Klisselika) and contemporary (e.g. tells Galabovo and Polski Gradets) sites, in which the accessibility of sites may has been an important factor. In addition, when the site was founded, the visual link with the adjacent earlier Klisselika tell may have also played a crucial role.

The logistics network derived from the cost surface analyses closely resembles the network of the Iskritsa dwelling site but since Gudgova tell is in the Eastern part of the valley, there are some differences that should be discussed (CDFig.154) (for details see Appendix A, p. 201- 202). The presence of the main valley routes is confirmed and there are six paths that connect the tell with sites located North of the Sokolitsa valley.

The panorama along the Sokolitsa valley from East to West provides a high level of site visibility, as well as landscape visibility, as visibility broadens while moving to the West.

Resources and land use

The size of the site is 1.7ha, which, according to the population estimation accepted in the study, should accommodate from 212 to 240 persons. The necessary minimum annual crop of 44,520 - 50,400kg to sustain such a population requires 222 - 252ha of arable land. The soil distribution around Gudgova tell is given in Table 5.8.4.

Exploitation area

Table 5.8.4 and CDFig.185 show that the soils around the tell show a patchy distribution, consisting of three main types – meadow, smolnitsa and cinnomonic forest soil. Such a dispersed distribution implies a certain type of cultivation, in which the particular knowledge of soil characteristics is crucial – e.g. smolnitsa is difficult to process under many circumstances but, in favourable times, can be very fertile. Hence, its cultivation involves a high effort/high yield strategy, in contrast to cinnomonic soil cultivation, which was lower risk/lower yield. The SCA was performed for all four different combination of soil types – meadow/smolnitsa, meadow/cinnomonic, smolnitsa/cinnomonic, meadow/smolnitsa/cinnomonic – in order to explore the extent to which the patchy soil distribution may have affected the exploitation area of the Gudgova tell.

Distance from site	Meadow soil	Smolnitsa	Cinnomonic
0- 500m	40ha	40ha	1ha
500-1000m	85ha	80ha	49ha
1000- 1500m	56ha	69ha	230ha
1500- 2000m	91ha	21ha	421ha
2000- 2500m	109ha	73ha	530ha
2500- 3000m	54ha	131ha	660ha
3000- 3500m	84ha	149ha	756ha
3500- 4000m	99ha	86ha	798ha
4000- 4500m	74ha	85ha	749ha
4500- 5000m	40ha	187ha	603ha

Table 5.8.4 Soil distribution around the tell Gudgova

In the case of joint meadow/smolnitsa exploitation, the area 500-2000m from the site contained sufficient arable land to sustain the estimated population. The distribution of these soil types would have allowed a fallow/arable land rotation in a segmental cultivation.

The similar distribution of meadow and smolintsa soil up to 500-1500m distance from the site defines the area as sufficient for subsistence exploitation in both combinations - meadow/cinnomonic and smolnitsa/cinnomonic. In both models, such an exploitation area assumes total deforestation. Since there is no evidence to support intensive forest clearance around the tell, the exploitation area should probably be enlarged up to 2000m from the site.

In the last case, in which all three soil types were cultivated, the area up to 500 - 1500m from the site contains enough arable land for a successful agrarian regime for the inhabitants of the tell. At the same time, there was no need for full deforestation of the area, which facilitated a segmental system of fallow/arable based on the patchy soil distribution. The area was previously cultivated by the occupants of tell Klisselika, which means that the region was already deforested and some soil exhaustion could be anticipated.

Therefore, the exploitation area of Gudgova tell is to be enlarged up to 2000m from the site, within which there is enough arable land for each of the four combinations of soil use, no total deforestation, availability of fallow land and the opportunity for segmental cultivation practices.

Catchment area

The objects and finds excavated on Gudgova tell define a broad catchment area of the site that is to be interpreted in terms of both the mobility of the tell inhabitants and then existence of short- and long-distance trade and/or exchange.

The chipped stone assemblage indicates a small-scale catchment area from 1 to 30 km, as well as a medium distance network of up to 100km (the Rhodopes and the Chirpan hills) and a long-distance catchment area from Northeast Bulgaria across the Stara Planina mountain range.

The minerals from which the polished stone tools at Gudgova tell have been made are summarised in Gaydarska (2004 : Table 5.8.5).

With the exception of the opal exposure 1km North West of the tell, the distribution of these rocks varies between 10 and 50km from the tell. An important exception to this middle-distance catchment area is the stone axe made of glaucophane schist (Gaydarska 2004 : AFig. 5.8.19A). So far, this type of metamorphic rock has not been identified in Bulgaria but, as long as there are other types of metamorphic rocks in Bulgaria, it is plausible that glaucophane schists once existed but have been heavily eroded (Machev, n.d.). Until more evidence to support such a claim is available, I would suggest that the stone axe was a long-distance import to the Gudgova tell. Such a type of rock is distributed in the Southern Aegean islands (Machev, n.d.). The presence of such an exotic object suggests a long-distance specialist exchange network. The axe is fragmented, which is a strong evidence for the social practice of personal enchainment. If the axe was brought whole on the tell, there is a possibility for another important social activity – the practice of gift exchange, whether of complete axes or fragments of axes (Chapman 2000). Trade contacts have been assumed between the island of Microvouni and Galabovo tell during the MBA on the base of stylistic similarities in pottery (Leshtakov 1996). The axe fragment from Gudgova tell suggests earlier contacts between communities in the study area and the Aegean, that, together with the evidence for figs from Galabovo tell, define the Aegean area as a recurrent partner in small-scale, infrequent and therefore significant prehistoric interactions.

Gold sources in Maritsa Iztok occur mainly in river sand sediments. Whether the gold of the two rings was of local origin or the ornament was imported is not possible to establish without scientific analysis.

The plant remains from Gudgova tell outline a different direction of human contacts in the later prehistory of the study region. The plum tree (*Prunus sp.*) is not a potential

species in Bulgaria as so far the wild taxa was not identified. Its initial distribution area is thought to be the Caucasus (Popova 1994). However, the long distance – over 1500km - and the presence of whole fruits excludes the possibility of direct import of fruits. It is more likely that seeds were brought and planted in the region. A few years after the initial publication of the collective find of plums on the Gudgova tell, some new discoveries were made, which may change the current hypothesis towards a possible origin in the Balkans. First, *Prunus domesticus* has been found in Pre-Cucuteni III layers at Ruşeşti Noi and in the Cucuteni A_2 layer at tell Poduri, 480km North East of the study area, as well as at other Cucuteni – Tripolye settlements (Monah at al. 1997). However, recent investigations in Bulgaria have shown that plums were gathered even in the Early Neolithic (Marinova 2002a), suggesting a much earlier migration of the wild species. Since the evidence from the two countries is not correlated, it is difficult to assess the origin of the plums in Gudgova tell – whether as local domestication in the Neolithic or as domesticated imports from the Cucuteni area. However, it is sure that, by the mid-5th Millennium Cal. BC, plums had already been introduced into the Danube basin. The presence of 23 whole fruits rather than just seeds presumes the existence of plum trees in the study region during the EBA.

The presence of at least 12 net weights supports the hypothesis of net fishing that may have taken place close to the tell, as well as at a distance. The same broad catchment range is valid for hunting. Although there is very little evidence for hunting – several antler tools and a deer skull, perhaps a hunting trophy - it is likely that the Gudgova occupants would have culled animals in the surrounding woods. The proximity of Sakar mountain foothills defines an area only 5-10 km from the site, with the probability of very rich game reserves in later prehistory.

5.8.4 Summary and discussion

Like all sites discussed so far, the Gudgova tell presents evidence for social practices of fragmentation, structured deposition and the burning of houses. Its particular location only 1km from the earlier and contemporary Klisselika tell, raises questions about preferences for site location. Since it is not known whether there was contemporary habitation on both sites, conclusive claims are not feasible. However, there are at least two reasons for the shift in settlement location. First, if the bounded space on Klisselika restricted further expansion, some families or the whole community have moved away but still very close to their old settlement. Or secondly, unresolved social issues forced the community to re-negotiate the existing social order, for which a new dwelling place was needed. At the same time, the link with the ancestors was equally important and this new place should be related to the ancestral tell. Such a link between the two places was made by the visual connection between the two tells. Thus, simultaneously, there was a physical separation but a symbolic link with the ancestors' tell, which constitutes one of the forms of the ancestor cult.

Natural resources were not a constraint in the shift of the site location, since there was intensive occupation from the Early Neolithic up to the end of the EBA facilitated by the abundance of suitable resources. Such long-lasting human occupation also suggests that the subsistence strategies during that time were well balanced and did not lead to drastic environmental changes.

Some production processes may have taken place on the tell but the only more or less secure evidence is for flint production.

The presence of exotic objects (glaucophane axe) and non-local objects (flint) places the Gudgova tell in a wider network of trade with exotic objects and in a smaller network of commodity exchange.

5.9 Polski Gradets tell

5.9.1 General information and present condition of the data

The tell near the modern village of Polski Gradets was investigated in 1987. During the autumn field survey of the MI expedition, pottery was found dating to the Late Chalcolithic, EBA, MBA, Late Roman, Medieval and pre-modern periods. The sherds derived from soil removed from the tell during the excavation of grave pits for the AD 19th century cemetery. Two 5 x 5m squares were excavated on the flat, upper, Western part of the tell in order to establish the stratigraphy and chronology of the site. During the excavations, four pre-modern graves were excavated and an additional four grave pits were identified. The 19th century graves have destroyed the cultural layer up to 2m in depth and no undisturbed contexts were found during the only investigation of this tell.

Archaeological evidence

Chalcolithic archaeological features were not reached in the 50 m^2 excavated area. However, on the basis of numerous Late Copper Age sherds found on the tell surface, it was concluded that the tell was occupied at the time of the Late Chalcolithic. Considering the height – more than 8m - it has been suggested that the site was founded during the Neolithic (Leshtakov et al. 2001), although no other evidence was given to support such a claim. Two arguments oppose this hypothesis: (a) no Neolithic sherds were found on or near the tell; and (b) tell Gudgova is of similar height and lacks Neolithic occupation! Bearing in mind that, until secure data is provided, any conclusive comment is precluded, I would conclude on the basis of the present evidence that the site was occupied from the start of the Chalcolithic up into

the BA. The BA layer is about 2m thick. The pre-modern grave pits at Polski Gradets tell were up to 2m deep and seemed to destroy several BA horizons and at least one Chalcolithic horizon.

Three successive building horizons were identified during the excavations. They consisted of three overlying dwellings, whose plans and size were not possible to establish due to the limited excavated area and subsequent destruction.

The lowest dwelling was burnt and its wall rubble was immediately overlain by the floor of the next house. The latter was of beaten clay, with brown –red spots, interpreted as a result of fire. An oven and a hearth were also found in the dwelling. The floor was overlain by a layer of ash and charcoal, interpreted as the debris of the burnt roof of the house. The soil above the dwelling was full of burnt wall rubble; it also contained sherds and animal bones. The last dwelling had a beaten clay floor, two ovens, a hearth and a built-in storage vessel. Above the floor, there was a layer of ash and charcoal, overlain by small and medium-sized pieces of burnt house rubble.

The soil in the whole excavated area, in general, contained sherds, burnt house rubble, small and medium-sized stones and ash and charcoal. The sherds from the last two dwellings dated the building horizons to the EBA2 stage. The few sherds published from the site confirm this chronology (AFig. 5.10.1). It was mentioned that there were unstratified MBA sherds on the tell as well, while the chronology of the lowest building layer was not discussed.

5.9.2 The site and its surroundings according to the GIS analysis

Tell Polski Gradets is located on a hill, at 189-213 masl (CDFig.186) It is on a $2\text{-}3^0$ slope (CDFig.187) with a South West aspect (CDFig.188). Although on a hill, the visibility from the site is very limited – to no more than 2.6km to the South of the tell (CDFig.189). There is a strip-like view over the hills West of the tell and a more consistent view over the Northwesternmost edge of the study region. Three barrows were probably visible from the tell (surely two and one – Tcherniova barrow - with one out of its four possible locations). Better but still limited is the visibility when 10m are added to the site location surface (CDFig.190). More patchy strips are visible over the Western hills towards the central part of the study area and the panorama around the tell itself is more consistent. There are a few more visible areas to the North, North West and North East of the site. In addition to previous sites, two more possible locations of Tcherniova barrow are visible.
The cost surface results (CDFig.191) are summarised in Table 5.9.1.

N of cost strip	Sites located in the cost strip
1	Polski Gradets pit site
2	Aldinova barrow, Ovcharitsa I and II
3	Gonova barrow, Goliamata, Manchova, and Ovchartsi barrows, Goliama Detelina flat site Tcherniova mogila – all locations
4	Taniokoleva mogila – all locations, Malkata mogila, Barrow 4
5	Kurdova mogila, Galabovo tell, MIBC
6	Obrutchishte, Atanasivanova mogila, both Iskritsa sites, Mednikarovo, Klisselika and Gudgova tells
7	KMBC

Table 5.9.1 Site distribution around Polski Gradets tell

There is a clear pattern of BA site location in areas of easier access. Pre–BA sites only began to appear in the 6th cost strip (with one exception – Ovcharitsa II is in the second cost strip). Therefore, it could be concluded that the reduction of the cost of site accessibility had happened during the BA, when denser settlement networks developed in the valley of the Ovcharitsa and the interfluve between the Sokolitsa and Ovcharitsa valleys.

The logistics network derived from the cost surface has a different overall pattern from those discussed so far, since it is made from a site that is located in the North part of the study region (CDFig.192). However, there are major similarities that confirm the presence of recurrent tracks in the later prehistory of the study region. The main South and North routes are the same in general and only the differences are going to be discussed here. There are two main differences in the North route and the reason for them is the change of the direction of movement - from East to West. For further details of the Polski Gradets logistical network see Appendix A, p. 203.

Resources and land use

There are two basal sizes for the Polski Gradets tell mentioned in the available literature:– 150 to 170m (MI report 1987) and 120m in diameter (Leshtakov et al. 2001). These figures resulted in two very different estimations of exploitation area presented in Table 5.9.2.

Site area	Population number	Annual crop	Arable land
1.1ha	141-192	29 610 - 40 320kg	148 – 201ha
2.5ha	318-432	66 780 – 90 720kg	334 – 453ha

Table 5.9.2 Estimation of exploitation area according to different site size estimates

Exploitation area

Calculations were performed for both ranges and it became apparent that, in the case of Polski Gradets, the population number affects the size of the possible exploitation area. Variables of the exploitation area are also due to the specific soil distribution around the site given in Table 5.9.3:

Table 5.9.3 and CDFigs.207 show a different pattern of soil distribution from those discussed so far for the MI sites. There is no meadow soil within a radius of 1000m around the tell and, instead, there is a new type of soil cover - – the rendzina type. The two main soil types were cinnomonic forest soil and smolnitsa, with a prominently zonal distribution. Estimations of the possible exploitation area followed a different pattern from the mechanism applied in the previous cases. First, the circle of 0 - 500m was included in the calculations, as it does not contain any meadow soil for pasture. Meadow soil was not taken into consideration for arable land calculations, since it appears at distances of 1000 - 1500m from the site in quantities more relevant for pasture than for cultivation. Three combinations of soil use were used to estimate the Polski Gradets exploitation area- only cinnomonic forest soil, cinnomonic forest soil and smolnitsa and a combination of cinnomonic forest soils, smolnitsas and rendzinas.

Distance from site	Meadow soil	Rendzina	Smolnitsa	Cinnomonic forest soil	Without soil	Initial pedogenesis	Artificial soil
0-500m	-	31ha	18ha	28ha	2ha	-	-
500-1000m	-	31ha	73ha	72ha	9ha	-	-
1000-1500m	15ha	13ha	134ha	177ha	1ha	-	-
1500-2000m	13ha	7ha	224ha	300ha	15ha	-	-
2000-2500m	24ha	35ha	276ha	342ha	33ha	-	-
2500-3000m	32ha	30ha	261ha	444ha	112ha	-	-
3000-3500m	18ha	16ha	319ha	495ha	173ha	4ha	-
3500-4000m	60ha	-	349ha	384ha	180ha	15ha	-
4000-4500m	67ha	-	436ha	343ha	114ha	60ha	21ha
4500-5000m	147ha	-	261ha	408ha	54ha	39ha	56ha

Table 5.9.3 Soil distribution around the Polski Gradets tell

In the case of the lower population estimate of 141-192, the area from 0 to 1500m around the tell contained enough arable land if all three soil types were cultivated or if the combination was restricted to cinnomonic forest soil and smolnitsa. If only cinnomonic forest soil was used, then the exploitation area should be enlarged to 2000m around the site.

For higher populations in the range 318-432, the exploitation area increases to a radius of 2000m for the use of all three soil types use, or for joint cultivation of cinnomonic forest soil and smolnitsa use; and up to 2500m if cinnomonic forest soil alone was cultivated.

In both cases, the defined exploitation area contains enough arable/fallow land, natural forest vegetation and pasture and browse land. The pattern of soil distribution suggests some form of zonal arable/ fallow rotation as well as some crop rotation. Cultivation of the rendzina soil would introduce some patchy cultivation practice, as this soil was located in two patches around the tell. However, the area of rendzina soil is only 75ha within a radius of 1.5km and the calculations have shown that its cultivation does not change the exploitation area size. This suggests that the rendzina soil was not relied upon as an important arable resource, possibly because it was an "unknown quantity" for interfluvial agriculture.

5.9.3 Summary and discussion

The investigation of the Polski Gradets tell exploitation area has two important implications. First, meadow soil was not a crucial prerequisite for site location. Secondly, in cases where the site population exceeded 200 people, in order to keep the exploitation area closer to the site, the tell inhabitants may have started to cultivate the smolnitsa, that is difficult to till but very fertile. Indirect evidence for possible smolnitsa exploitation may be the fact that the site was founded on a place without meadow soil – a type relatively easy to cultivate. The Late Copper Age pottery found on the tell is typical for the KGK VI complex, that is known to comprise experienced agricultural communities. As discussed earlier (see p.

113.), the initial occupation of this site is not known but, on the base of the resource distribution, it is likely to suggest that the first settlement was not before the beginning of the Copper Age. The argument for such a hypothesis is that any agricultural group needs social time to adjust its subsistence strategy and technologies to new or variant ecological conditions. The transition from alluvial cultivation to smolnitsa processing is not impossible during the Neolithic but a certain time was needed to explore the area and the available resources, as well as to develop the necessary knowledge and skills to cope with smolnitsa cultivation. So far, no Neolithic site is known in the study region that completely lacks meadow soil within a 1-km radius of the site. During the Neolithic, the study area was not densely settled and there were huge alluvial areas, which were not inhabited. It was also possible that the initial occupation was not connected to questions of soil availability at all. Its subsequent development into a tell, however, suggests that the site location was not accidental, since the successful sustaining of a long lasting tell occupation requires the ready availability of critical soil resources. Therefore, it could be concluded that the development of the Polski Gradets site into a tell validated the initial settlers' choice of location and assumes a successful, long-term agro-pastoral subsistence strategy.

Polski Gradets tell was an important landmark in the landscape since it forms part of a recurrent pattern of long-distance visibility from most of the sites located along the Ovcharitsa valley (for details see the sections on visibility in Chapter 6). It is possible that the social landscape discourse prompted the spatial distancing but, at the same time, visual reference was made to an ancestral place as a deliberate act of relating-at-a-distance.

5.10 Polski Gradets pit site

5.10.1 General information and earlier studies

The Polski Gradets pit site was excavated during several archaeological seasons in 1995-98 and 2002. Since the site has not been fully excavated, its actual size is not known. The features and materials date from the EBA, LBA, EIA, Roman/Late Roman and Medieval periods. The site is still under investigation and it is not published yet. Details on the archaeological evidence from the site on which the following discussion is based are given in Gaydarska (2004 : 242-244).

5.10.2 Plant remains

The plant impressions on the daubs from pit 58 have been investigated. They contained negative traces of einkorn, bread wheat and barley.

5.10.3 The site and its surroundings according to GIS analysis

It was not possible to establish the exact size and location of the Polski Gradets pit site, since the site is still under investigation and has not yet been published. It is known, however, that it is a flat site of probably more than 1 ha in area. Four possible corners of the site were chosen in accordance with the site documentation. In order to simplify the analysis, a single dot was chosen to represent the site. This dot, respectively the cell in the grid, is roughly in the middle of the four possible corners of the site. The other possible locations are not displayed, since they present points, while this is a flat site with an extensive horizontal stratigraphy. However, each GIS analysis has been checked against all the possible corners and the results are summarised in the text.

The Polski Gradets pit site is located on a hill, at 189-213 masl (CDFig.208). It is on a $2\text{-}3^0$ slope (CDFig.209) with a North West aspect (CDFig.210) and has very restricted visibility. It is patchy around the site – 2km to the West and North West and 1 km to the South (CDFig.211). There are some visible spots in the Northernmost parts of the study area. Only Ovcharitsa II is visible from the site. The cost surface analysis (CDFig.212) and site distribution are given in Table 5.10.1:

N of cost strip	Sites located in the cost strip
1	Polski Gradets tell, Ovcharitsa I and II
2	Aldinova and Gonova barrows
3	Ovchartsi barrow, Goliama Detelina flat site, Tcherniova mogila – all locations
4	Taniokoleva mogila – all locations, Goliamata, Malkata and Manchova, barrows, Barrow 4
5	Kurdova mogila, Galabovo tell, MIBC 2-4
6	MIBC1, Atanasivanova mogila, both Iskritsa sites, Klisselika and Gudgova tells
7	Mednikarovo tell, Obrutchishte, KMBC

Table 5.10.1 Site distribution around Polski Gradets pit site

The Polski Gradets pit site emerged in an area with easy and quick access to one earlier and possibly contemporary site. The latter was even visible from Polski Gradets pit site. Relatively less accessible in terms of cost but still in close vicinity were another two contemporary barrows. During the LBA, the pattern of

high accessibility of contemporary sites is still valid but the barrows with their possibly contemporary burials are further away than the EBA sites.

The logistical network derived from the cost surface is similar to the previously discussed network for the Polski Gradets tell, with two important differences (CDFig.213). For details of the routes from/to Polski Gradets pit site see Appendix A, p. 204.

The movement between Polski Gradets pit site and the contemporary EBA or LBA sites, which in the same time were in an area with least cost accessibility, assured an almost complete site intervisibility. The number of sites during the EBA around Polski Gradets pit site followed a relatively dense site distribution pattern, which changed to a more dispersed pattern during the LBA. The movement between Polski Gradets pit site and these distant sites followed the main valley routes and shared their high site visibility. If a LBA flat site existed North of Gudgova tell, there was an opportunity for round trips across the study area. The link between some LBA burials in EBA barrows and the flat cemetery near Polski Gradets will be discussed in Chapter 8.

5.10.4 Summary and discussion

The Polski Gradets pit site has not been fully published and the rare references to it consider the site as ritual. The long duration of similar activity (it was specially underlined that the fill of the pits was astonishingly similar despite the huge chronological differences, cf. Leshtakov et al. 2001 : 22) on one and the same place was not discussed in detail. The choice of the site has been suggested to be related to either gold sources in the Goliamata reka, flowing next to the modern village, or the presence of two types of rocks that may have been exposed as surface outcrops at the time of the active use of the site (pers. comm., K. Nikov). It may be noted, however, that there is no trace of on-site processing of any of these resources.

The Polski Gradets pit site contains evidence for social practices already discussed in previous case studies and generally barely discussed in Bulgarian prehistory and usually connected with some ritual activities. The pits provide evidence for certain types of activity that were either practiced on the site or somewhere off-site. The presence of fire products betokens fire concentrated in small areas (ash and charcoal), as well as fire over wider areas, outside the pits (burnt daub). It is likely that fire products (ash, charcoal, burnt daub) derive from burnt houses from (? nearby) settlements but it is also possible that the burning took place at the site. The presence of buildings on the site was not discussed in the field documentation. Indirect evidence for fire at the site derives from the sondage at the South East edge of the site, deliberately located at the lowest area between two slopes (Gaydarska 2004 : 248).

The pits contain fire products (ash, charcoal or burnt daub), with evidence for secondary use of daub (pieces of daub), feasting (animal bones) and deliberate fragmentation (sherds, fragments of whorls) (Leshtakov et al. 2001 : 22). The BA vessel that was broken on the spot could be interpreted as “trizna” – a ritual pottery scatter. Special patterns of structured deposition could be observed in one of the pits, in which the very striking North/South division of finds expressed contrasts in both quantity and diversity, that ultimately results in different use of the two parts of the pits (Gaydarska 2004 : 244). Such a pattern of the deliberate deposition of contrasting objects may symbolize some ideological contrast (e.g. culture/nature) or some specific tension in social discussion.

Given the present paucity of contextual data, such patterns cannot yet be adequately interpreted. But such data, however, reinforces the interpretation of all of the pits and graves as the result of deliberate and controlled acts, i.e., structured deposition. The graves contain traces of similar depositional activities to those in the pits – fire products, the secondary use of daub and fragmented objects, even though they post-date the pit deposits by more than a millennium (Gaydarska 2004 : 243).

Two of the graves betoken a certain type of post-burial activity, involving body fragmentation. On the basis of the evidence disussed in Gaydarska (2004 : 243, 248-9), the hypothesis for post-burial activity is most likely. The deceased was treated in a specific way that included post-mortem activities in which keeping part of the dead body among the living was important. Indirect evidence for memorialisation is the excavators’ claim for post-burial “trizna”, with the pottery scatter found some cms above the pelvic area.

Chapter Six - The Ovcharitsa Microregion

6.1 Gonova mogila (barrow)

6.1.1 General information and earlier studies

Gonova mogila was almost totally destroyed in 1964-65 during the construction of the Ovcharitsa dam. In 1980, the remaining part of the barrow – with a basal diameter of 7 – 12 m and a height of 2 m - was excavated. Three graves have been found, which were dated to the EBA (AFig. 6.1.1a). The skeleton in the initial grave was covered by red ochre. According to the publication, a long obsidian blade (AFig. 6.1.1c) and a necklace of copper and shell beads were claimed to be found in this grave (Kunchev 1991). However, according to one of the excavators, the finds were not discovered in the grave context but still could be related to the deceased (Borisov 1991). An exact parallel to the grave was given from the Csóngrad burial, in Hungary (Ecsedy 1979: 23, Fig. 12-13) and it was accepted as one of the earliest pit grave culture graves in Bulgaria, dated to the (?) first half of the IV mill. uncal BC (Kunchev 1991).

The position of the second grave-pit is not clear. According to the published illustration and catalogue data, it is a secondary grave dug into the mound. According the text, however, the grave was dug into the sterile ground. The base of the pit and the skeleton were covered by red ochre. Two broken stones were found near the waist on both sides of the skeleton (AFig. 6.1.1.b). The grave was also considered as one of the earliest pit-graves in Bulgaria.

The last burial was of a child. The bones were seriously damaged by the acid soil. Neither grave goods nor red ochre was found in the grave.

The published illustration and catalogue data show that the burial was covered by a mound of broken stones.

6.1.2 The site and its surroundings according GIS analyses

Gonova mogila is located on a high hill, at 164- 189 masl (CDFig.227), with a 3-4^0 slope (CDFig.228) and a Northern aspect (CDFig.229). The viewshed analysis from the site was performed a) from the surface (CDFig.230), b) with an additional 2m, which was the barrow's height during the excavations (CDFig.231), and c) with an additional 4m to justify the visibility if the barrow height was reduced by later destruction (CDFig.232). All the three viewsheds share one and the same pattern of good visibility to the Northeasternmost part of the study region, patchy to the Northwesternmost part and with visible spots over the hills above Polski Gradets tell. The difference between the three is in the degree of consistency of the view, especially around the site. From the surface, there was a patchy view over the area 700m South of the site and a visible strip 1.5km South West of the site. The height of 2m assured visibility over an additional strip 800m to the East. The viewshed from 4m increases the visibility between the site and the above visible strips around the site. The only contemporary visible site is Aldinova mogila. Polski Gradets pit site would have been visible from Gonova mogila if the barrow was 4m higher.

The results of the cost surface (CDFig.233) analysis are summarized in Table 6.1.1:-

N of cost strip	Sites located in the cost strip
0	Ovcharitsa I
1	Ovcharitsa II, Aldinova barrow
2	Polski Gradets tell, Polski Gradets pit site
3	Tcherniova mogila – all locations, Ovchartsi barrow, Goliama Detelina flat site
4	Taniokoleva mogila – all locations, Goliamata, Malkata and Manchova barrows, Barrow 4
5	Galabovo tell, MIBC3 and 4, Kurdova mogila
6	MIBC1 and 2, Obrutchishte flat site, Iskritsa pit site, Iskritsa dwelling site Atanasivanova mogila, Klisselika, Gudgova and Mednikarovo tells
7	KMBC

Table 6.1.1 Site distribution around Gonova mogila

The sites that most likely were contemporary with Gonova mogila were located in the area of easiest access. Beyond the first cost strip, there are sites that are most probably later than Gonova mogila, which may have be a result of a certain pattern of (re-)occupying the landscape.

The logistics network (CDFig.234) derived from the cost surface analyses repeats in general the pattern of the sites in the interfluve (viz., the Polski Gradets sites). The main direction of movement is from East to West and not from North to South, as it is from the two Polski Gradets sites. This means that moving 5km North to the very edge of the Ovcharitsa valley is enough to re-direct the

movement; in order to reach Gudgova tell, for example, one should use the main routes along the valleys rather than to climb up the hills due South of the site.

The main North and South routes are the same, being the track of the only path that crosses the study region through the contemporary mining area. There are differences in some of the paths or segments to single sites that are due to the direction of the movement. For further details on Gonova mogila logistical network see Appendix A, p. 204 – 206.

6.1.3 Summary and discussion

Gonova mogila is claimed to be one of the earliest burials, if not the first one, in the Maritsa Iztok study area. It contains rare evidence (the obsidian blade) that relates the barrow to a burial located at a significant distance, as well as evidence that relates it to contemporary and later barrows in the region (e.g. the stone cairn). Taken as a complex, however, the grave set resembles a local LCA burnt house inventory from Galabovo tell (see p. 81), which is strong evidence for relational continuity between the social practices on tells and on barrows. This is a crucial starting point in the discussion for the origin of the barrows, which has so far been uncritically accepted to be part of a non-local nomadic tradition.

The data from Gonova mogila confirms that long-distance contacts, as documented by the presence of non – local flint and *Spondylus* shells, were not an exception for the study area.

And finally, the most important evidence from Gonova mogila is the explicit formalization of the burial domain, documenting the emergence of a new arena of social power.

6.2 Ovcharitsa I flat site

6.2.1 General information and earlier studies

The Ovcharitsa I flat site was excavated in 1981-83. At that time, its Southern part had already been buried as a result of re-cultivation activities in the area. The site was supposed to cover 1ha, of which only 0.23ha was investigated. Traces of LBA, EIA and Medieval habitation have been found. The site has two major publications that make an extremely selective presentation of the material from the LBA and the EIA (Kuncheva – Russeva 1991, Leshtakov et al. 2001). During my museum study, I was able to establish that the total amount of excavated material was 13 boxes (0.7 m^3 each) of pottery and animal bones. The following description summarizes the publications and site reports.

Archaeological evidence

The consistency of cultural layers was destroyed by severe modern cultivation. As a result, there was no undisturbed feature found on the site. Three building horizons were identified dating to the LBA, which form a 1m-thick cultural layer. The first building horizon was marked by pieces of burnt house rubble. The plan, size and inventory of the dwelling were not possible to establish. A large quantity of sherds and tools was found in the context of the first and second occupational stages. The last building horizon has almost totally been destroyed. Several similar scatters of burnt house rubble were found that could be related to the general stratigraphic sequence. A major characteristic of Ovcharitsa I cultural layer is the intensive distribution of burnt house rubble.

The number and type of finds from Ovcharitsa I are summarized in Tables 6.2.1-2:

Axes	Pestles	Polishers	Whetstones
5	47	15	3

Table 6.2.1 Stone artifacts from Ovcharitsa I

Whorls	Net weights	Loom weights	Figurines
32	38	3	2

Table 6.2.2 Clay artifacts from Ovcharitsa I

Fragments of stone moulds for spearheads, two bone tools, 11 horn/antler tools and eight flints were also found. Some of the horn/antler tools were not finished, which made the investigators infer bone and horn production on the site. Whole and restorable vessels and sherds were the main archaeological material excavated from the site (AFig.6.2.1).

The published illustrations contain whole and restored vessels, as well as fragmented and whole stone tools, whorls and bone tools (AFig.6.2.1).

6.2.2 The site and its surroundings according to GIS analyses

The Ovcharitsa I flat site is located on a terrace at 140-164 masl (CDFig.260), on the edge of a 1-2/2-3^0 slope (CDFig.261) with a West/North West orientation

(CDFig.262). The visibility from the site is limited – none to the South of the site, less than 1km to the West, 1km to the North West, none to the North and North East and patchy to the East and South East (CDFig.263). The hills 3 - 3.5km to the South are visible, as is the Northern part of the Ovcharitsa valley from 1 to 3 km to the North and North West. EBA Gonova mogila is the only visible site.

The cost surface analysis (CDFig.264) and site distribution is given in Table 6.2.3: -

N of cost strip	Sites located in the cost strip
0	Aldinova and Gonova barrows
1	Ovcharitsa II, Polski Gradets pit site
2	Polski Gradets tell
3	Tcherniova mogila – all locations, Ovchartsi barrow, Goliama Detelina flat site
4	Taniokoleva mogila – all locations, Goliamata, Malkata and Manchova barrows, Barrow 4
5	Galabovo tell, MIBC2-4, Kurdova mogila
6	MIBC1, Obrutchishte flat site, Iskritsa pit site, Iskritsa dwelling site Atanasivanova mogila, Klisselika, Gudgova and Mednikarovo tells
7	KMBC

Table 6.2.3 Site distribution around Ovcharitsa I

Two contemporary cemeteries were in non-immediate but fairly easy access to the Ovcharitsa I site. LBA barrow burials are located in the 4th cost strip, while possibly contemporary settlements were in the 5th and 6th cost strips, which would have required a day trip for a return journey. The LBA KMBC is in the most remote area.

The similarity of the cost surface analyses of Gonova mogila and Ovcharitsa I imposes the similarity of their logistical network (CDFig.265). The only difference is in the first segment (the last if the movement was reverse) of the path to Aldinova mogila. It descends to the West for 300m and then turns right, due North for 800m when it reaches the main North route (CDFig.266).

Viewshed analysis is performed only for this path, as the discussed segment may affect the visibility from the path (CDFig.267). The remaining paths share the panorama discussed for the Gonova mogila case. The path from Ovcharitsa I to Aldinova mogila has good visibility 1-1.5km to the North and South of the path but has patchy visibility beyond that point. The tiny visible strips over the Ovcharitsa valley assure the visibility of the Ovchartsi barrow to the Southwest. Gonova mogila is also visible from the path. The panorama from this path is the initial view for every route from Ovcharitsa I.

Resources and land use

The site area was claimed to be 1ha, which should accommodate 125-168 people. Their minimum annual consumption of cereals should be 26 250 - 35 280kg, for which 131 – 176 ha of arable was needed. The site is located in one of the most devastated areas of the study region. The impact on the soil distribution is visible in Table 6.2.4.

Exploitation area

The calculations of the exploitation area were made for the presently existing soil types. Some suggestions for the soil cover in the destroyed area are also made. In the area up to 2000m from the site, there was sufficient arable land for the estimated population; it consisted of meadow soil, cinnomonic forest soil and smolnitsa. The distribution of the soils is zonal – meadow to the East, cinnomonic to the South East and smolnitsa to the North and East, suggesting arable/fallow land rotation in some kind of zonal cultivation. In the exploitation area, there was more arable/fallow land than was required for the estimated population; hence, some natural vegetation should also be present. The area up to 2000m also contains 577 ha of potential arable land and 100 ha of present dam basin. The construction of the dam suggests existence of a river in the Ovcharitsa site vicinity (the site is 1km from the dam), hence for possible meadow distribution. The pattern of soil distribution shown on CDFig.268 does not contradict the possible presence of meadow soil around the site. Therefore, I should assume that there was more meadow soil in the exploitation area. The increased quantity of meadow soil should result in a diminution of the exploitation area and some kind of cultivation in which meadow soil may have been used instead of the heavy smolnitsa.

Distance from site	No soil	Artificial soil	Initial pedogenesis	Meadow	Cinnomonic forest soil	Smolnitsa	rendzina
0-500m	9ha	17ha	29ha	27ha	-	-	-
500-1000m	1ha	3ha	58ha	73ha	4ha	-	-
1000-1500m	53ha	3ha	50ha	59ha	34ha	37ha	-
1500-2000m	127ha	47ha	39ha	6ha	72ha	96ha	15ha
2000-2500m	150ha	55ha	49ha	11ha	66ha	88ha	52ha
2500-3000m	118ha	18ha	51ha	29ha	71ha	255ha	19ha
3000-3500m	136ha	2ha	20ha	8ha	128ha	256ha	-
3500-4000m	6ha	-	-	46ha	151ha	344ha	-
4000-4500m	5ha	-	1ha	39ha	165ha	354ha	5ha
4500-5000m	-	-	24ha	18ha	153ha	310ha	47ha

Table 6.2.4 Soil distribution around Ovcharitsa I

In summary, even in the present devastated state of the soil distribution, the area up to 2000m from the site contains enough arable land to sustain the dietary regime of the estimated population at Ovcharitsa I.

6.2.3 Summary and discussion

Given the present state of the data, it is not possible to make conclusive claims about settlement practices. There appears to be evidence for settlement activity, as there are traces of continuous occupation, building activities and production processes (horn/antler and stone mould). Two probably contemporary sites were located close to the settlement. Both cemeteries were flat and situated in areas of earlier sites. There are two different paths to the cemeteries, from which the mortuary places are intervisible. The presence of burnt rubble and charcoal in one of the cemeteries – the Polski Gradets pit site - suggests that a possible source for these burnt remains was Ovcharitsa I – the closest site to Polski Gradets with evidence for burnt daub concentrations. The data from Ovcharitsa I and the Polski Gradets pit site constitute important evidence for the practice of burning houses and burnt rubble re-deposition during the LBA. Indirect evidence for deliberate fragmentation practice is the fragmentation of stone and bone tools, fragmented whorls and the stone spearhead mould.

Ovcharitsa I is located in an area from which only one EBA barrow was visible. The LBA cemeteries were not visible from the site but located in a region with very easy access. Other possible contemporary settlements and burials are relatively remote, suggesting a dispersed pattern of settlement in comparison with the EBA pattern.

6.3 The Ovcharitsa II site

6.3.1 General information and earlier studies

The Ovcharitsa II site (AFig. 6.3.1A) was excavated over several years, from 1984 to 1989. At present, the site is under mining spoil and 1.8ha of its 2.5ha area was investigated. There are three major publications of the site (Kančev and Kančeva-Russeva 1996, Kuncheva-Russeva 2000, Leshtakov et al. 2001). All of them generalize the evidence from the investigations rather than presenting the excavated features and material in detail. Four occupational stages were recognized on the site – Neolithic, EBA, LBA and EIA. The following description summarizes the data from the publication and a part of the site documentation. During my museum study, I was not able to work with the archaeological material from the site due to problematic museum storage conditions at Nova Zagora Museum. I was given access to only the information and materials available in the museum displays. Therefore, the current summary of the archaeological evidence is incomplete but is still the only one that unites all the available data sources.

Archaeological evidence

The earliest occupation during the Late Neolithic is mentioned only in the site reports and no material or any other information has been published.

The following occupational stage - the EBA – dates the construction of the most prominent features. They were organized in a complex system of enclosures, of which only one was fully excavated and the remaining three were sampled (AFig. 6.3.2A). The Northern part of the inner ring consisted of a series of inter-connected spaces described by the excavators as “chain-like dwellings” (Kančev and Kančeva-Russeva 1996), while the Southern part was made of broken stones mounted in clay. The rampart was 165m long and from 50 to 175 cm wide. Another “chain of dwellings” 4m in parallel to the North of the first one was also found. Its West and South part was not excavated, while its Eastern side ends into a fortification wall. It is interesting to point out that the Northern “dwelling chain” reaches the wall roughly in the same area where the South “dwelling chain” turns into a stone wall (AFig. 6.3.2A). The fortification wall is poorly preserved, with rows or stone piles mainly in the lowest part. It is in parallel to the two dwelling chains and was constructed of two parallel rows of broken stones. The space between the rows was filled with small stones, pieces of clay (maybe daub) and limestone. The investigated rampart length was 268m.

Fifteen – twenty cm South of the end of the "dwelling chains", a stone construction was found that has some additional fortification facilities. Their characteristics were not specified and the feature was accepted to be the entrance to the settlement.

The last parallel enclosure was a ditch with a length of 168m. It was up to 1.20m deep, 1-2.5m wide in the base and 3.5-5m wide at the top. The ditch was filled with crumbly soil, mixed with animal bones, sherds, pieces of daub, stones, burnt daub, bone and stone artifacts (AFig 6.3.3a).

The "chain dwellings" were claimed to be piriform, dug up to a depth of 2m and connected by their short sides. The "party walls" were made of broken stones of different size. In several cases, they were not very well preserved and there were only stone scatters or single stones. In some case broken stones also additionally supported the long sides.

Five subsequent horizons were observed in the vertical cross-section of the "dwellings" (AFig. 6.3.4A). The upper horizon contained postholes for roof supports of the "dwellings". Only the upper two horizons floors of beaten clay were observed. Traces of thin oven bases were observed in the last 3 horizons. Their light construction made excavators infer a temporary type of settlement. In the bounded area of the inner enclosure, there were 29 EIA pits. The EIA layer has destroyed the EBA layer, in which two rectangular houses were found (AFig. 6.3.2A). They were interpreted as semi-pit dwellings as they were discovered at a depth of 83cm.

The houses were marked by pieces of daub/plasters and were 7.5/6.5m and 7/5.5 in size. The total number of dwellings was 18, while the total number of ovens was 19. There were dwellings with two ovens and dwellings with no oven at all. The first building horizon contained no ovens; there was only one in the second building horizon, seven in the next occupational level, eight in the 4th building horizon and three in the last occupational level. The only contextual information for the dwellings derives from squares F3/G3, where an oven base and a dwelling floor were found under a stone scatter.

Eleven crouched inhumations were excavated North and South of the ditch (AFig. 6.3.2B). The data from the relatively standardized burials is summarized in Table 6.3.1. On the basis of the pottery – the only grave goods found in five of the graves – the cemetery was dated to the LBA/EIA transition period (AFig.6.3.8G-J); parallels were made with pottery from one of the MI barrows (Manchova mogila), as well as with the ceramics from the Tei IV-V culture of Eastern Romania (Kuncheva-Russeva 2000). The other cited parallels derive from North West Bulgaria (Vratsa region) and North East Bulgaria (Varna region) and are generally dated to the EIA. The published evidence is extremely scanty and the only possible conclusion is that the graves had no indication on the surface (grave 3 was destroyed by grave 4). Traces of burning or any other particularities of the grave fill were not mentioned at all.

The archaeological material from the Ovcharitsa II site is very selectively published. During my museum study, I could establish the data summarized in Tables 6.3.2-5, as well as that there were 31 large boxes of unstudied material. Some of the vessels were in the process of preparation for publication (Gaydarska 2004 : AFig. 6.3.5A, B, D, F-N; AFig. 6.3.6A-N). There were also two boxes of as yet uninvestigated animal bones.

Axes	Polishers	Pestles	Adzes	Ploughshare	Cylinders	Maces	Total
43	6	4	4	1	10	5	73

Table 6.3.2 Stone artifacts from Ovcharitsa II (AFig. 6.3.7 A – E)

Net weights	Whorls	Spoons	Axe models	Zoomorphic Figurine	Others
78	3	2	3	1	1

Table 6.3.3 Clay artifacts from Ovcharitsa II (AFig. 6.3.7 P, Q; AFig. 6.3.5 G, H, J)

Awls	Whorls	Processed bones	Processed horn/antler
25	4	24	14

Table 6.3.4 Bone and horn artifacts from Ovcharitsa II (AFig. 6.3.8 H – K)

Axes	Adzes	Jewelry	Miniature vessels	Others
1 (AFig. 6.3.7N)	2 (AFig. 6.3.7L,O)	1	1 (AFig. 6.3.5L)	2 (AFig. 6.3.7M)

Table 6.3.5 Bronze artifacts from Ovcharitsa II

No.	Grave equipment	Depth	Body position	Orientation (head)	Size of the skeleton crouched		State	Inventory	Age and gender
					Length	Width			
1	Irregular shaped pit	1.20 m	Hocker aside	South	0.53 m	0.40 m	Destroyed	Kantharos	Child
2	Irregular shaped pit	1 m	Hocker to the left	East	0.75 m	0.40 m	Destroyed	Bowl	Adult
3	Irregular shaped pit	1 m	Hocker to the left	North-East	0.80 m	0.35 m	Destroyed from grave No. 4	No	Adult
4	Irregular shaped pit	1.20 m	Hocker to the left	North-East	0.90 m	0.40 m	Good	No	Adult
5	Irregular shaped pit	1.20 m	Hocker to the left	South	1 m	0.70 m	Good	No	Adult
6	Irregular shaped pit	1.10 m	Hocker to the left	West	0.90 m	0.50 m	Good	Cup	Adult
7	Rectangular, East-West with deviation to the north, 1.20 x 0.60 m	1.20 m	Hocker to the left	East with deviation to North	0.80 m	0.40 m	Good	No	Juvenilis, 16-17
8	Rectangular, East-West 1.50 x 0.60 m	1.30 m	Hocker to the left	East	1.20 m	0.40 m	Good	Bowl	Male, 40-45
9	Rectangular, East-West 1.20 x 0.45 m	1 m	Hocker to the left	North-East	1.06 m	0.40 m	Good	Kantharos	Adult
10	Irregular shaped pit	1.20 m	Hocker to the left	West	1.05 m	0.40 m	Destroyed	No	Adult
11	Irregular shaped pit	1.20 m	Hocker to the left	South-West	0.50 m	0.30 m	Destroyed	No	Adult

Fig. 6.3.1 Evidence for Late Bronze Age cemetery at Ovcharitsa II

Source: Kuncheva – Russeva 2000

The chipped stone assemblage consists of 2 cores, 3 blades and 23 retouched tools (AFig. 6.3.6). They are found mainly in dwelling contexts. It was claimed that, with the exception of the two cores, the initial and secondary processing had taken place off-site (Zlateva-Uzunova, 2003).

There were very few grinding stones and evidence for agriculture activities consisted of mattocks and hoes, mainly made of bone. However, in the two dwellings found in the area bounded by the inner enclosure, numerous complete and fragmented grinding stone were found, as well as pieces of burnt house rubble and sherds. The contextual information from Ovcharitsa II is also very limited. The material mentioned was found mainly in the dwellings and their surroundings. Two horn tools, a zoomorphic figurine and three unspecified objects derive from the rampart. During the museum study, I was able to establish that at least one box containing animal bones and sherds also derived from the rampart.

One horn tool, one awl, one axe and 8 sherds from body parts subsequently perforated and then accepted to be net-weights were found in the ditch.

In the site reports, numerous pieces of burnt house rubbles, fragmented and whole vessels were mentioned. The illustrations of the published material show restorable but not whole vessels (AFig. 6.3.5A-F; AFig.6.3.8E) and at least two fragmented stone tools (AFig.6.3.7C, E). Fragments of stone maces were reported to be found as well.

In summary, the extremely scattered data from Ovcharitsa II show evidence for burning activities (the burnt house rubble) and fragmentation practices (AFigs. 6.3.5-8), structured deposition (the enclosure themselves) and feasting activity (the animal bones). The presence of stone cylinders is an indicator of on-site polished stone tool production.

6.3.2 The site and its surroundings according to GIS analyses

The site is located on a hill, at 140-164 masl (CDFig.269), on a $2\text{-}3^0$ slope (CDFig.270) with a Southern aspect (CDFig.271). There is not very good general visibility from the site (CDFig.272). It is patchy over the North part of the Ovcharitsa valley and there is a consistently visible strip to the West and North West of the site. The areas North, North East and East of the site are totally invisible, while views to the South and South East are patchy. Two barrows (surely one and one with one out of four possible locations) and the Polski Gradets pit site are visible from the site.

According to the cost surface analyses (CDFig.273), the site distribution is the following: -

N of cost strip	Sites located in the cost strip
0	Aldinova barrow
1	Ovcharitsa I, Gonova barrow, Polski Gradets pit site
2	Polski Gradets tell
3	Tcherniova mogila – all locations, Ovchartsi barrow, Goliama Detelina flat site
4	Taniokoleva mogila – all locations, Goliamata, Malkata and Manchova barrows, Barrow 4
5	Galabovo tell, MIBC2-4, Kurdova mogila
6	MIBC1, Obrutchishte flat site, Iskritsa pit site, Iskritsa dwelling site Atanasivanova mogila, Klisselika, Gudgova and Mednikarovo tells
7	KMBC

Table 6.3.6 Site distribution around Ovcharitsa II

During the EBA, two barrows had the easiest access to the Ovcharitsa II site, followed by settlements and subsequently by an increasing number of other barrows. During the LBA, two of the contemporary sites had very easy and quick access, while three barrows were in the 4th cost strip and one barrow cemetery in the last cost strip. In is important to point out that only one of the sites with relatively easy access from Ovcharitsa II is visible from the site.

The logistics network derived from the cost surface analysis repeats in general the networks of the previously discussed sites located in the North part of the study area (CDFig.274). The minor differences are again in the paths between the sites in the North East part of the study region, while the main South and North routes remain the same. To avoid repetition, route tracks and their viewshed are going to be presented only for the path Ovcharitsa II – Aldinova mogila that was not previously discussed (CDFig.275).

The path is about 1.6 km long and initially descends to the North West and then heads due North across the valley and finally ascends for 200m to the West to reach the barrow. The visibility from the path is good up to 2km in each direction from the path and thereafter with patchy views to the North/North East, the South/South East and the North parts of the Ovcharitsa valley, but with no views to the East (CDFig.276). Three barrows

(two certainly and one with one out of four possible locations) and the Polski Gradets pit site are visible from the path.

A summary of the landscape setting of the Northeasternmost part of the study area during the EBA is given in sections 6.4.2 – 3.

Resources and land use

The Ovcharitsa II site is located in the most devastated area of the study region. Most of the possible exploitation area of the site is now either without any soil cover or at some stage of non-natural soil development. Table 6.3.7 shows the present state of soil distribution around the site.

Distance from site	Without soil	Artificial soil	Initial pedogenesis	Smolnitsa	Meadow	Rendzina	Cinnomonic forest soil
0-500m	81ha	-	-	-	-	-	-
500-1000m	230ha	15ha	3ha	-	-	-	-
1000-1500m	216ha	53ha	65ha	70ha	-	-	-
1500-2000m	131ha	68ha	84ha	241ha	14ha	-	-
2000-2500m	28ha	8ha	122ha	302ha	128ha	35ha	32ha
2500-3000m	8ha	-	18ha	469ha	130ha	52ha	79ha
3000-3500m	39ha	-	-	559ha	50ha	1ha	174ha
3500-4000m	20ha	-	19ha	507ha	25ha	58ha	228ha
4000-4500m	89ha	13ha	40ha	267ha	125ha	14ha	189ha
4500-5000m	157ha	52ha	7ha	206ha	41ha	-	220ha

Table 6.3.7 Soil distribution around Ovcharitsa II site

The pattern of totally devastated resource distribution imposed a different means of estimation of the possible exploitation area. First, calculations were made for the areas that still have their natural soil cover while, secondly, some interpolations were made for the soil cover in the destroyed area.

Exploitation area

Although the area of the site was mentioned to be 2.5ha, the actual habitual area did not exceeded 1.4ha, which is approximately the area bounded by the inner enclosure. Such an area could accommodate 215-240 persons, who would need 45,150 – 50,400kg grain annually for their basic dietary needs. The amount of arable land needed is 225-252ha.

As Table 6.3.7 shows, the main type of soil around the site is smolnitsa, which, according to CDFig.277, is spread South, West and North of the disturbed area. The distribution of meadow soil is patchy to West and North and more consistent to the East of the disturbed area. The estimates have shown sufficient arable land for browse, fallow/cultivation rotation type of agriculture and preserved natural vegetation within 2500m of the site. In such an exploitation area, the ability to cultivate heavy smolnitsa is implicit, while meadow soil may have been used either for pasture or as a buffering arable resource, as this soil is unevenly spread within the 2500m limit.

Such a pattern of land use is not an exception in the exploitation area pattern of the sites in the study region. However, this is the maximum size of exploitation area for Ovcharitsa II, as 1,104ha within the 0-2500 m area from the site were covered with some type of soil that most probably have been in use as well. Although it is not possible to reconstruct the original soil distribution, the elevation, slope and soil maps suggest that the destroyed region North of the site was a flat area of the valley of the Ovcharitsa that was covered by meadow soil. The hills to the West and South of the site may have been covered by smolnitsa, while the higher terrain to the South East could have been covered by rendzina and/or cinnomonic forest soils. Such a hypothetical soil distribution would favour a meadow type of agricultural resource, which would have reduced the dependence upon the heavy smolnitsa and defined a smaller size of exploitation area.

In summary, if Ovcharitsa II was occupied as a settlement, the area within 2500m of the site would have provided sufficient resources for a successful agro-pastoral subsistence strategy.

Catchment area

The only information for possible non-local resources derives from the flint assemblage. Most of the tools were made of high-quality material with localized sources in North Bulgaria. Flints from the same sources were found at Galabovo and Gudgova tells, that integrates the site with one and same broad catchment area and distribution network (cf. Sirakov 2002). There were tools made of type of material not found at other sites in the study area but found at other contemporary sites in the Upper Thracian Plain (e.g. Ezero, Yunacite and Mihalich: Sirakov & Tsonev 2001). The diversity of raw materials and sites on which different varieties of these materials are found suggest several smaller distribution networks that exchange and trade local and regional materials and /or tools that exceed the study region by 30 to 100km.

6.3.3 Summary and discussion

The current interpretation of Ovcharitsa II as a fortified settlement with pit-like chain dwellings is a result of two major problems in Bulgarian prehistory. First, the site was excavated 15-20 years ago, when the notion of structured deposition in ditches not necessarily connected with defensive functions was far from consideration. Although recently, after the discovery of several enclosures for which defensive claims were difficult to make, ditches are now seen to serve other types of activities, the Ovcharitsa II site data has not been re-considered in the light of the new evidence.

The second problem concerns the definition of a pit-dwelling. This issue has been generally discussed (Bailey 2000; Chapman 2000c) but, in Bulgarian archaeological theory and practice, there is neither a formal debate nor a definition of a pit dwelling. Claims for pit or semi-pit dwellings are produced and reproduced without the justification of any experimental archaeology examples or any taphonomic processes.

A detailed critique of the pit-dwelling notion, although very important, is not an aim of the current study. Rather, I should focus on the evidence from Ovcharitsa II in order to critique the interpretation of the pit-dwelling claim in this particular case study. The comments on pit-dwellings are going to be connected with a second critique - of the fortification nature of the site - as both claims seem to miss the important alternative of structured deposition in the enclosure.

There is an obvious inbalance between the size of the features and their contents – a contradiction reinforced by the large quantity of un-studied material. On the basis of my own working experience in Bulgaria, I should assume that the selectivity in the published material is due to the general research pattern in Bulgaria – the representation of feature sherds for purposes of relative chronology. I should also assume that the boxes in the Nova Zagora museum storerooms contain mainly pottery and fewer artifacts from other material. Most probably, the content comprises fragments of non-restorable vessels found as pottery scatters in each of the enclosures. The presence of sherds was mentioned in the fill of the rampart and in the dwellings from the bounded area.

The pottery deriving from the site is typical for the EBA agricultural society of South East Bulgaria that used to occupy both tells (e.g., Ezero) and flat sites (e.g., Mihalich), in houses that bore no resemblance to pit-dwellings. Therefore, there is no evidence to conclude that the features described as chained pit-dwellings were, in fact, actively inhabited. An alternative explanation is that certain type of practices have taken place at Ovcharitsa II, which may have involved the construction of house-like features but which, in fact, were not actually inhabited. These practices involved a widespread use of structured deposition of large quantities of material culture.

As discussed in Chapter 3 (see p. 32) three ditch enclosures have been published so far in Bulgaria. One of them (Cherna Gora) is reminiscent of Ovcharitsa II enclosure in terms of its inner and outer ditches. The fill of the ditches comprises sherds, ash, charcoal, stones, daub and animal bones. There is some internal variability in the assemblages - more restorable vessels in Drama-Merdzumekja, no ash and charcoal at Konevo (Leshtakov 2002). What is more important to point out is the presence of a hearth at Cherna Gora. Despite these minor differences, the initial interpretation was that the three enclosures were related to ritual, not defensive, practices. It is a fact that the number of burnt features and beaten clay levels in the ditches at Ovcharitsa II is greater than in the other enclosures and maybe that is the reason for the interpretation of these features as pit-dwellings. However, it is not necessarily the number nor the particular type of the feature (beaten clay level, oven, etc.) which are so significant but the contexts in which they were found.

There are strong arguments against the claim for houses with triangular/trapezoidal cross-sections dug to a depth of 2m, such as insects, lack of drainage, a small floor area and steep, irregular walls. As regards the question of length of occupation, the investigators themselves point out the light construction of the ovens, concluding a temporary nomadic habitation. However, such a claim for temporality strongly contradicts the defensive function of the wall and the ditch.

In addition, if such houses existed, they would be a unique form of house architecture not known before or after the Ovcharitsa II phenomenon. Before this current interpretation of Ovcharitsa II can be accepted, there should be sound arguments for profound social changes at the beginning of the BA in the Maritsa Iztok region of the kind, which would have led to the radical re-conceptualization of living space. Neither before nor after, in Maritsa Iztok study area and anywhere in the Balkans have such arrangements of dwelling space been ever encountered. This leaves the interpretation of the Ovcharitsa II ditches as features which defined and enclosed ritual space – an enclosure which was reinforced by multiple episodes of structured deposition within the ditches, often mimicking domestic practices.

6.4 Aldinova mogila

6.4.1 General information and earlier studies

Aldinova mogila was excavated in the late 1960s and two inhumations and eight cremations were found (AFig.6.4.1B). The site has two publications, which are consistent only in the Roman chronology of the cremations. The size of the barrow in the first publication is mentioned to be 4m in height and 40m in diameter and

the inhumations are dated to the LBA on the basis of the presence of a LBA settlement in the vicinity of the barrow (Batsova and Kunchev 1974). The second publication re-dates the burials as one of the earliest BA graves in the MI study area and the barrow size is said to be 1m in height and 36/30m in diameter (Kunchev 1991). The following description summarizes the publication data and the different size is considered in the GIS analysis.

Archaeological evidence

Grave 1 was located 2m South of the barrow center and was considered to be the initial burial. The deceased is in a crouched position on the back, covered with red ochre. The skeleton was destroyed by the acid soil and the skull was missing. It was not specified whether the missing skull was a result of soil acidity or post-mortem activity.
Grave 2 was 3 m to the North East of the centre of the barrow. Despite lying in the sterile soil, it was considered as secondary one. The body was in a crouched position on its left side. The skeleton was also affected by the soil acidity. The base of the grave-pit was covered with red ochre. The head orientation of the deceased was related to the location of the enclosure Ovcharitsa II and it was claimed that the dead were "looking" towards their settlement (Dimitrov 2000).

6.4.2 The site and its surroundings according to GIS analyses

Aldinova mogila is located on a hill at 115-140 masl (CDFig.278), with a 3-4^0 slope (CDFig.279) and an Eastern aspect (CDFig.280). The general visibility from the barrow is limited – none to the North, East and South but good over the Ovcharitsa valley to the South West/North East vicinity of the site (CDFig.281). The hill on which Gonova mogila is located is visible; hence the barrow is visible as well. The hills between the two Polski Gradets sites are also visible. Ovcharitsa II site is possibly seen from Aldinova mogila, as it is at 10m from a visible cell. As stated earlier (see p. 40), the viewshed analysis is calculated for a cell 1ha in area, while Ovcharitsa II is bigger than 1ha. Thus, there is a possibility that at least part of the EBA enclosure was visible from the barrow.

A viewshed analysis was performed with 1m added on the surface, corresponding to the height of the barrow. There is hardly any improvement in general visibility (CDFig.282).

Another viewshed was calculated with 3m in addition to the surface, in case the barrow has suffered some late destruction. The panorama around the site is better but remains generally the same over the Northeasternmost part of the study area (CDFig.283).

The viewshed based upon a 4-m height for the barrow does not contribute much more to the general visibility from Aldinova mogila. It is important to point out that the site's visibility remains unchanged during the process of "growing" of the barrow (CDFig.284).

Cost distance analysis (CDFig.285) results are summarized in Table 6.4.1:-

N of cost strip	Sites located in the cost strip
0	Ovcharitsa I and II
1	Gonova barrow
2	Polski Gradets tell, Polski Gradets pit site
3	Goliamata, Malkata and Manchova barrows, Tcherniova mogila – all locations, Ovchartsi barrow, Goliama Detelina flat site
4	Taniokoleva mogila – all locations, Barrow 4
5	Galabovo tell, MIBC, Kurdova mogila
6	Obrutchishte flat site, Iskritsa pit site, Iskritsa dwelling site Atanasivanova mogila, Klisselika, Gudgova and Mednikarovo tells
7	KMBC

Table 6.4.1 Site distribution around Aldinova mogila

In summary, Aldinova mogila is located very close to its possible contemporary sites, which in the same time are most probably the earliest BA sites in the study area. The later EBA sites are relatively evenly distributed to the South and South West, while the EBA barrows are clustered in the 3rd- 5th cost strips.

The logistical network is the same as discussed for Gonova mogila, as only the paths between the Northern sites differ. In this particular case, these are the paths to Ovcharitsa I and Polski Gradets pit site – both already commented in the previous case studies (CDFig.286).

The three possibly earliest EBA sites in the North part of the study area are not intervisible from their static location. From the paths between them, however, and to the only earlier site in the area – Polski Gradets tell – almost full intervisibility is achieved. This is to say that when the first trips between the Late Copper Age Polski Gradets tell and EBA Gonova barrow were made, visible areas were spotted in which the later or almost

contemporary sites were subsequently located. While walking between the three sites, however, the earlier tell cannot be seen, as if it was important to establish the visual link with the contemporary sites rather than with the earlier sites. Polski Gradets tell was eventually re-used during the BA, after some time of abandonment, which, in relation to its invisibility from the EBA sites and the paths between them, may have meant a deliberate, if temporary, denial of any link to the previous inhabitants of the landscape.

6.4.3 Summary and discussion

All the three EBA sites commented so far appear to follow a recurrent pattern of cost distance in respect to the distribution of the other sites. All three of them are located in almost reciprocal accessibility in terms of cost, as well as sharing almost identical approaches to the rest of the sites in the study area. This may indicate a deliberate location of sites along the valley of the Ovcharitsa, in which Aldinova and Gonova barrows, together with Ovcharitsa II, maintained a certain distance from the other slightly later sites (the later barrows were founded at a distance that follows this pattern) but also from the earlier sites (e.g. Polski Gradets tell). Such a hypothesis is based on the landscape characteristics of the sites and, while there is no clear relative chronology of the barrows in the region, its validity is highly probable because of a) the likely early date of Gonova barrow and b) the obvious spatial interrelation between the sites and the remaining sites of the study region. Even if the sites were not chronologically related, they are still spatially clustered, thus evoking one and the same accessibility pattern. This is to say that the subsequent re-settling of these sites after long periods of time may indicate a deliberate return to an older pattern of spatial relations, for the legitimatization and/or re-negotiation of some specific social issues.

6.5 Ovchartsi barrow

6.5.1 General information and previous studies

The Ovchartsi barrow was excavated in 1986 when its Northern part was swept away during mining activities (AFig. 6.4.1A). In addition, contemporary looting pits destroyed the burial mound, which was shown through excavation to be 5.5m in height and 40m in diameter. The results of the investigation are published in a short article (Kalchev 1994). At least three phases of burial were identified on the site – EBA, EIA and Medieval. The following section summarizes the data from the publication. In some unpublished references, the barrow was related to a flat site 200m East of the barrow. It was also interrelated to other four barrows considered as belonging to one cemetery, though without supporting evidence (Leshtakov and Borisov 1995, Dimitrov 2000).

Archaeological evidence

The initial grave of the barrow is thought to be the crouched inhumation 8m South West of the centre of the mound. The grave-pit was dug 50cm into the sterile soil. There were pieces of red ochre near the feet. Close to the left hand, a shallow oval dish with two small perforations was found. Next to it were bones of the hind leg of a pig. Two more oval dishes were found close to the left knee. The grave was classified as belonging to the Pit-Grave culture. Despite published parallels with the pottery from the 12th and 13th building horizons of the Ezero tell, the grave was not chronologically related to the development of the Ezero culture. Rather, the burial was considered as one of the earliest Pit-Grave culture barrows.

The second grave contained a cremation which, on the basis of the grave goods, was dated to the EIA.

A third, cist-like grave, made of broken stones, was found 4.20m below the present surface of the barrow and 6m North West of its centre. An incomplete human skeleton, without grave goods, was found in the grave. At the same level from the surface and close to the centre of the mound, a hearth/trizna was excavated. Traces of intensive fire were said to be present but no pottery scatter. A bone of the hind leg of a deer was found in the hearth. The cist –like grave and the hearth/trizna were both dated to the EIA, although arguments for such dating were not discussed.

Five and a half m from the present surface of the barrow in its Southern part, several spots of ash and charcoal were excavated. Their total number was not specified and it was mentioned that three of them contained human bones, two with very fragmented bones of small caprines, and five of them with only ash and charcoal. The features were interpreted as cremations that took part off-site and the bones were buried in three places. The other burnt features were connected to the particularities of the burial rite.

A reconstruction of the barrow formation was presented in which the initial pit-grave was covered by a low mound. Later, the mound was leveled for the placement of the cremation and ritual hearths, which in turn were covered by another mound. The EIA cremation was the next burial that was deposited to the North and yet more soil was added to the barrow. The last deposits were the cist-like grave and the hearth/trizna, after which the final part of the barrow mound was formed.

6.5.2 The site and its surroundings according to GIS analysis

The Ovchartsi barrow is located on a hill at 140-164 masl (CDFig.287), with a 5-7^0 slope (CDFig.288) and a North West aspect (CDFig.289). There is a good visibility over the Ovcharitsa valley up to 5km to the South West of the

barrow (CDFig.290). There is a patchy view over the Northern parts of the valley and to the Northeasternmost part of the study area. There are also patchy visible strips over the hills South and South East of the barrow. Three barrows are visible from the site - Goliamata, Malkata and Tcherniova (three out of four possible locations). Aldinova mogila and Ovcharitsa II are located 12-15m from a visible cell, so there is a possibility that these sites were visible as well.

The viewshed with 5.5m in addition, which was the barrow's height at the time of its investigation, shows more visible areas in comparison to the first viewshed (CDFig.291). There are more patchy views over the hills South East of the barrow and over the hills between the two Polski Gradets sites. Polski Gradets tell becomes visible as well.

Almost the same areas and the same sites were visible with an additional 7m to the barrow surface (CDFig.292). Cost surface analysis (CDFig.293) arranges the sites in a pattern different from that discussed so far (Table 6.5.1).

N of cost strip	Sites located in the cost strip
0	Ovchartsi barrow
1	Tcherniova mogila – all locations, Goliama Detelina flat site
2	Goliamata, Malkata and Manchova barrows, Barrow 4, Taniokoleva mogila 1
3	Taniokoleva mogila 2-4, Kurdova mogila
4	Galabovo tell, MIBC, Ovcharitsa I and II, Polski Gradets tell, Aldinova barrow
5	Obrutchishte flat site, Iskritsa pit site, Iskritsa dwelling site Atanasivanova mogila, Klisselika tell, Polski Gradets pit site, Gonova barrow
6	Gudgova and Mednikarovo tells
7	KMBC

Table 6.5.1 Site distribution around Ovchartsi barrow

In summary, the Ovchartsi site location suggests a pattern of inter-site arrangement in which a contemporary EBA settlement and a barrow are situated in an area with easy access. They are surrounded by a dense "barrow zone", while other possible contemporary settlements are at a greater cost distance from Ovchartsi barrow. It is interesting to point out that sites located in different valleys (e.g. Gonova mogila in the Ovcharitsa valley and Klisselika tell in the Sokolitsa valley) have equal accessibility in terms of cost. This may be interpreted in two ways: a) for the barrow location, other factors were considered more important than the least cost distance from earlier and contemporary sites (e.g. it was important that the Polski Gradets tell was visible but not necessarily with easy access, etc.); or b) the sites in the first and the second cost strip have been most important for the Ovchartsi barrow location.

The logistics network shows a mixed pattern in comparison with the logistics network considered so far (CDFig.294). For the sites East of Ovchartsi, the routes are exactly the same as the ones from Galabovo tell (CDFig.7), while, for the sites West of Ovchartsi, the path network repeats the Gonova mogila pattern (CDFig.234). There is one major difference from both networks – the path to Barrow 4, which is straight to the South West of Ovchartsi (CDFig.295). The path starts to the South/South West descending for 1.4km, ascending for 200m to reach Barrow 4. From the path, there is a patchy view over the Northeasternmost part of the study area and over the hills in the Eastern part of the study region (CDFig.296). There is good visibility over the valley of the Ovcharitsa and its Northern part. Three barrows and Polski Gradets tell are visible as well.

6.5.3 Summary and discussion

There are two disputable claims in the current interpretation of the Ovchartsi barrow. The first one concerns the relative chronology of the initial grave. The presence of three vessels with good parallels in the tell Ezero sequence dates the grave as contemporary with, or later than, Ezero A phase. Therefore, the assignment of grave 1 to the earliest phase of Pit-Grave burials is problematic. The presence of pottery also suggests a relation between the deceased and the sedentary agriculturalists of the Ezero culture.

The second general disagreement is connected with site formation processes and the chronological determination of features without datable material. In the absence of a cross-section in the publication, there is no possibility of justifying the suggested vertical and horizontal stratigraphies.

To summarize, the Ovchartsi barrow was not one of the earliest barrow burials in the study area. It contained traces of activity that included the deposition of whole and partial human skeletons, burning and feasting with animal bone deposition.

6.6 Barrow four

6.6.1 General information and earlier studies

Barrow four was excavated in 1987 and is the last barrow located in the land of the village of Goliama Detelina, for which reason it is termed "number 4". During the excavations, the barrow was 1.60m in height and 30m in diameter but its original height was believed to be over 2m in height, as the site was continuously cultivated (AFig. 6.6.1). The graves found in the barrow were dated to the EBA and the numerous Late Neolithic and Chalcolithic sherds in the mound were believed to derive from an earlier flat site, whose soil and deposits were used to form the barrow. As traces of such earlier sites have not been found near the barrow, it was considered that their possible location was to the North of the barrow – an area already destroyed by the mining. The excavation results are published (Leshtakov and Borisov 1995) and are summarized in the following description.

Archaeological evidence

The initial grave (N5 according to the field number) is in the sterile soil in the centre of the ancient mound. The body was on its back with crouched knees. There were no grave goods but a stone was found near the heart. The soil above the body was mixed with ash and charcoal. Red ochre was also mentioned as present.

The next burial was also in the sterile soil 8m South of the initial grave. The body was in a crouched position on its left side. There were no grave goods found.

The third burial is in the mound and the body is in a crouched position on the back. No grave goods were found. Red ochre was spread in the head/shoulder area.

The next grave in the mound contained traces of burning (a hearth according to the excavators) next to the head of the deceased. The body was in a crouched position on its left side. Next to the body in the pelvic area was found the base of a thick vessel that was related to the Catacomb grave culture rite of zharovnia. The ritual is related to the use of fire during the burial process.

The last burial was also in the mound and the grave pit was identified only by its burnt base. The body was in an extended straight position. There were no grave goods and no red ochre.

Nine other features were also excavated, which were said to be related to the burial activity. The investigators discussed the possibility that some of them were "real" graves or cenotaphs. Since soil acidity has destroyed the majority of the skeletons in the graves, it is likely that some human bone deposits in the features may have suffered a similar effect. Strong evidence for symbolic burials (cenotaphs) and cremations was not found and the features were finally interpreted as ritual pits and trizna. The characteristics of the feature are summarized in Table 6.6.1. The features were either on the surface or dug into the mound but both had heaps above them. There was a debate on the chronology and parallels with the pit-grave culture but no final conclusion or reconsideration of the traditional steppe nomadic hypothesis.

6.6.2 The site and its surroundings according to GIS analyses

The site is located on a hill at 164-189 masl (CDFig.297), with a North West aspect (CDFig.298) and a $2\text{-}3^0$ slope (CDFig.299). The visibility from the barrow is very restricted (CDFig.300). There is a visible spot 800-1300m to the West and North West of the site, as well as one more from 2.1 to 3.2 km to North West. No sites are visible from the barrow but Goliamata mogila is on the edge of visible/invisible cell.

The viewshed with an additional two meters to the surface, which was the height of the barrow during its excavations, has very little improvement in the same general directions as above (CDFig.301).

Still restricted but better in comparison with the two previous panoramas is the view from the barrow with an extra 4m height (CDFig.302). A tiny visible spot to the North East of the study area assures visibility of the Ovchartsi barrow. There are two tiny visible spots to the North West as well.

The results of the cost distance analysis (CDFig.303) are summarized in Table 6.6.2:-

N	Stratigraphic position	Feature type	Inventory	Traces of burning	Animal bones	Relation to grave
1	In the mound	Beaten platform	Fragmented vessels/two restored (AFig. 6.6.1D, E)	No	No	4
2	In the mound	Platform of scattered vessels	Fragmented vessels	No	No	1
3	In the mound	Beaten platform	A pot, a lower grinding stone, sherds of thick vessels (AFig. 6.6.1G - I)	Spot of ash and charcoal next to the stone	Poorly preserved, among the sherds	4 or 5
4	In the mound	Platform	Heavily fragmented vessels (2?)	No	No	4 or 5
5	In the mound	Platform	Fragmented vessel	Spot of burnt soil	Heavily burnt, among the sherds	-
6	In the sterile soil	Pit	Sherds, stone pestle; at 35cm from the pit a base of thick vessel	Spot of ash and charcoal over a hearth 70-80cm East of the pit; over them pottery scatter	No	4 or 5
7	In the mound	Platform	Pottery scatter, small quartz stones (AFig. 6.6.1A - C)	No	No	4
8	In the mound	Platform	Heavily fragmented vessel, scatter of small quartz stones	No	No	4
9	In the sterile soil	Pit	Fragment of several vessels, one un-baked dish (AFig. 6.6.1J - L)	Small pieces of charcoal among the sherds	Almost decayed, in the North part of the pit	5

Table 6.6.1 Ritual features in barrow 4

N of cost strip	Sites located in the cost strip
0	Barrow 4
1	Goliamata, Malkata and Tcherniova mogila – all locations,
2	Goliama Detelina flat site, Manchova and Ovchartsi barrows, Taniokoleva mogila – all locations
3	MIBC
4	Galabovo tell, Kurdova mogila, Klisselika tell, Iskritsa dwelling site
5	Iskritsa pit site, Atanasivanova mogila, Gudgova and Polski Gradets tells, Ovcharitsa I and II, Aldinova barrow
6	Obrutchishte flat site, Mednikarovo tell, Polski Gradets pit site, Gonova barrow, KMBC

Table 6.6.2 Site distribution around Barrow 4

It is interesting to point out that the pattern observed for the Ovchartsi barrow, in which sites located in different valleys have equal accessibility in terms of cost, is valid for Barrow 4 as well. The great diversity of sites in the last two cost strips may mean that the barrow location in terms of cost is to more closely related to sites in the nearer cost strips. Thus, a clear pattern of barrow clustering could be observed up to the third cost strip. Only one EBA settlement was found in this cost distance "cluster" that could be related to the location of the Barrow 4 (see section 6.9.2).

The logistical network presents a mixed pattern of all the paths and networks discussed so far (CDFig.304). The main North route and the segments to the sites in the North part of the study area are the same as in Galabovo tell case study (CDFig.7), with one exception – the

segment to Tcherniova mogila is the same as in the Gonova mogila logistical network because of the direction of the movement from East to West.

There are three new tracks in the Barrow 4 logistical network - to Taniokoleva mogila, to Goliamata and Malkata mogila and to Kurdova mogila (See Appendix A, p. 206-207 for details on the logistical network).

In summary, the paths to the earlier and contemporary sites in the Southern part of the study area provides the view over all the Neolithic/Copper Age sites, as well as over a high proportion of the Bronze Age sites, despite the lack of a consistent landscape panorama. Almost the same suite of sites are visible from the paths from Barrow 4 to sites in both the Northern and Southern parts of the study area.

6.6.3 Summary and discussion

One of the most striking aspects of Barrow 4 is the number of memorial structures, which is bigger than the number of the burials. This evidence suggests that special memorial rites may have been performed not only in relation to certain individuals but also as an act of community solidarity and reconciliation. Such a hypothesis is supported by the fact that the number and the combination of the features (platforms, pits, trizni) in Barrow 4 is unique in the study area. In addition, Barrow 4 is located in an area with equal accessibility from the two microregions. Therefore, it is likely that the features in the barrow memorialise an act of joint pilgrimage to a common ancestral place, where important social re-negotiations have taken place through a set of social practices such as personal enchainment through pottery sherds between the living from one hand and identity exchange with the ancestors on the other hand.

An intriguing aspect of the creation of barrow 4 concerns the deposition of Neolithic and Chalcolithic sherds in the mound of the barrow – a point that receives little attention in the site publication. If, as suggested, the soil for the mound was taken from potential settlements, it is important to point out that there was a deliberate choice of this particular area for barrow building. But if the sherds did not derive from any, as yet unknown, nearby settlements, they must have been carried from a long distance. The closest Chalcolithic sites in terms of cost are Galabovo tell and Iskritsa, while the closest Neolithic site is Klisselika tell – all located in the 4th cost strip.

This evidence reinforce the importance of the social practices that have taken place in Barrow 4, in which the targeted link with the ancestors is done first on the level of rituals relating the newly-dead and the living, and second on the level of "sealing" the act of such a deposition, thus creating a closed cycle linking the *newly dead-living-ancestors*.

6.7 Goliamata mogila (the big barrow)

6.7.1 General information and earlier studies

The barrow was excavated in 1987 and 34 graves with 38 skeletons were found. The barrow was 4.20m in height, 41/46m in diameter and had no traces of subsequent severe destruction (AFig. 6.7.1A). The initial publication of the barrow is very short (Kunchev 1991) and during the preparation for the full, detailed second publication, the excavator passed away. This has left his analysis incomplete and the way in which the archaeological data from the site are currently presented (Kunchev 1995) contains some discrepancies in the stratigraphic data and lacks any analytical discussion. The barrow was generally dated to the EBA, with four subsequent LBA burials and the construction of the barrow was related to the Pit Grave culture. An additional article was published that discussed in details the ceramic grave goods and some particularities of the EBA burial rites (Leshtakov and Popova 1995).

Archaeological evidence

Table 6.7.1 summarizes the evidence from the graves (AFig. 6.7.2). In addition to these data, some other points are noteworthy.

A bonfire with incompletely burnt beams was found in the mound. It was mentioned in relation to the ash and charcoal found close to grave 18.

In three graves (19,29 and34), organic covers were excavated (most probably wooden) - a rite that was related to the Pit Grave culture (Panayotov 1989). Grave 34 had traces of organic material on the grave pit base – another ritual paralleled in the Pit Grave culture. However, each of these three graves contained pottery. Graves 19 and 25/26 had stelae in the grave mounds. One similar stele above grave 25/26 had traces of red ochre.

N	Stratigraphic position	No of indivi duals	Position of the body	Objects in the grave	Red ochre	Type of feature	Depth in cm	Date
1	In the mound	1	Crouched on left	No	None	Pit	150	LBA
2	In the mound	1	Crouched on left	No	None	Pit	140	LBA
3	In the mound	1	Crouched on left	No	None	Pit	150	LBA
4	In the mound	1	Crouched on back	No	None	Pit	160	LBA
5	In the mound	1	Crouched on back	No	None	Pit	370	

6	In the sterile soil	1	Crouched on back	No	Pieces	Pit	420	
7	In the sterile soil	1	Crouched on back	No	Pieces	Pit	410	
8	In the sterile soil	1	Crouched on back	A dish	Powder	Pit	420	EBA1-3
9	In the sterile soil	1	Crouched on back	A dish	Powder	Pit	440	EBA1-3
10	In the sterile soil	1	Crouched on left	A dish	Powder	Pit	410	EBA1-3
11	In the mound	1	Crouched on back	No	Pieces	No	280	
12	In the mound	1	Crouched on back	Vessel base	Powder	Pit	290	EBA3/MBA
13	In the mound	1	Crouched	No	Pieces	No	335	
14	In the mound	1	Crouched on left	Silver pendant	Pieces	No	335	
15	In the mound	1	Crouched on left	No	Pieces	Pit	370	
16	In the sterile soil	1	Crouched on left	No	Pieces	No	400	
17	In the sterile soil	1	Crouched	No	Pieces	Pit	440	
18	In the sterile soil	1	Crouched on back	A bowl	Powder	Pit	420	EBA1
19	In the sterile soil	1	Crouched on left	A jug, 2 dishes, bronze needle	Pieces	Pit	420	EBA1
20	In the mound	1	Crouched	No	Powder	No	440	
21	In the mound and in the sterile soil	2 babies	Crouched	No	Pieces	No	440	
23	In the mound	1	Crouched on left	No	-	Pit	430	
24	In the mound	1	Crouched on back	2 dishes, 3 jugs	Powder	Pit	440	EBA1
25	In the sterile soil	2 babies	Crouched on left and right	No	Powder and pieces	Pit	440	EBA1
27	In the mound	1	Crouched on back	A dish	Powder	Pit	440	EBA1
28	In the mound	2	Crouched on left	A dish	Powder	Pit	440	
29	In the mound	2	Crouched on left and right	7 dishes, 2 jugs, a pot, horn awl	Two worked pieces	Pit	440	EBA1
30	Initial	1	Crouched on back	Bronze rings	Powder	Pit	440	
31	In the sterile soil	1	Crouched on left	A cup and two dishes	Powder	Pit	440	EBA1
32	In the sterile soil	1	Crouched on left	No	Powder	Pit	440	
33	In the sterile soil	1	Crouched on left	A dish	None	Pit	440	EBA1
34	In the sterile soil	1	Crouched on left	A jug, two broken stones	Powder	Pit	440	EBA1/2

Table 6.7.1[*] Summary of the graves data in Goliamata mogila; Source: Kunchev 1995, Leshtakov and Popova 1995

[*] There are two gaps in grave numbers since two of the collective burials were given successive numbers.

Chronology

According to the excavator, the earliest was grave N30, which was considered as one of the earliest pit-grave culture burials in the region. The next grave was N34, followed by 19, 24 and 29 – all dated to the EBA but after the time of the first burial. Another 24 graves were also generally dated to the EBA. One grave (12) was related to the Catacomb culture and 4 graves were dated to the LBA on the basis of the sherds present in the grave pit fill. Numerous subsequent episodes of the addition of further soil were mentioned but just four graves were said to have their own mounds – the initial grave 30, grave 25 with the two stelae and graves 19 and 29, both of which were taken as the richest graves in the barrow (Kunchev 1991).

One of the aims of the latest publication of the barrow (Leshtakov and Popova 1995) was the relative chronology of the graves. Eight of them (34, 33, 31, 29, 27, 24, 19 and 18) were dated to the EBA1 period on the basis of parallels in pottery. Two of them (34 and 29) appeared to be dug towards the end of the period rather than in its beginning. Three graves (8, 9 and 10) were generally dated to the EBA since their pottery was atypical. Grave N25 was accepted to belong to the EBA1 on the basis of its stratigraphic position. More problematic was the chronology of grave 12. It contained a generally atypical vessel but the fact that it was the base of a vessel allowed the investigators to infer the presence of "zharovnia". Such a case was already discussed in relation to grave 4 (grave 2 in the original publication) in Barrow 4.

According to Leshtakov & Popova (1995), most of the graves with pottery were dated on the basis of parallels with BA sites in the Upper Thracian Valley – Ezero, Yunatsite, Bereketska and Ovcharitsa II.

Interpretation

According to the excavator, the barrow was a kin burial place and the deceased in grave 30 was the communal ancestor. Leshtakov disagrees in general with the Pit-Grave notion and provides strong arguments against such claim (Leshtakov and Popova 1995). His precise analysis of pottery reveals that the shape of the vessels from the barrow is not different from the forms of settlement pottery. The decoration, however, is poorer, as the percentage of decorated vessels in EBA settlements varies from 40 to 64%, while in Goliamata mogila it is only 15%. Vessels or specific shapes and decoration that are strongly characteristic for EBA 2 and 3 were not observed (Leshtakov and Popova 1995). I would assume that, if some burials were conducted during these periods, either no vessels or only uncharacteristic ones were put in the graves.

Further analysis of the pottery has pointed out that the main difference between the vessels in Goliamata mogila and the contemporary settlement ceramic production lies in the characteristics of the temper. Organic materials (chaff, grains, and animal excrement) were found in the clay of 33% of the vessels. Very often, the organic temper is accompanied by small pieces of red ochre. There are cases in which only organic materials or only red ochre was used as temper. Associations with plants are also visible on the base of the vessels. Four of the vessels in grave 29 have mat impressions, while the usual drying surface for BA vessels in the settlements of the region is sand. The technological, typological and decorational characteristics of the pottery from Goliamata mogila shows significant differences from the pottery from the BA settlements on the one hand, and from the pottery from other BA burials on the other. On that basis, Leshtakov & Popova (1995) concluded that the vessels in Goliamata mogila were deliberately made for the burials, which was also the case with the vessels from the flat BA cemetery near Bereketska tell, 30km to the North West. There are, however, many differences between the pottery from the two mortuary sites, that were interpreted as evidence for different burial rites (Leshtakov and Popova 1995).

Spatial analysis of the vessel location showed that the upper part of the body and the area around the head were the preferred places for deposition. These results do not contradict the pattern observed at other BA cemeteries (e.g. Bereketska tell).

The vessels were either whole or broken because of soil pressure. Most of them were interpreted as vessels for liquids – jugs, cups and small dishes. In two of the dishes and the vessel base (zharovnia), red ochre was discovered and it was concluded that these vessels were used as containers of the mineral. In only one dish, residues of ritual food (meat) were claimed to be present.

In summary, the latest publication of Goliamata mogila opposed the typical Pit Grave culture characteristics with precise pottery analysis and anthropological evidence showing the presence of the local South European racial type. The authors, however, did not present any alternative hypothesis for the appearance and distribution of the barrows and their possible social implications.

6.7.2 Plant remains

Eleven out of thirty vessels had traces of plant impressions. The thirty-seven prints were of einkorn (*T. monococcum*), emmer (*T.dicoccum*), bread/compact wheat (*T. aestivo/compactum*), two species of barley (*Hordeum vulgare var. nudum* and *Horedum vulgare*), millet (*Panicum miliaceum*) and vetch (*Vicia ervilia*). Weed species were also identified but only two of them were specified – *Bromus secalinus* and *Setaria italica*.

6.7.3 The site and its surroundings according to GIS

The barrow is located on a hill at 140-164 masl (CDFig.322) on a 1-2^0 slope (CDFig.323), with a Northern aspect (CDFig.324). From the site, there is good visibility over the valley of the Ovcharitsa and its Northern parts and patchy over the Northeasternmost part of the study area and the hills between the two Polski Gradets sites (CDFig.325). There are also visible strips to the South West of the site and to the central and Eastern parts of the study area. Four barrows and Polski Gradets tell are visible from the site.

The viewshed with an additional 4.20m in height shares the same general visibility but with an overall improvement in all directions (CDFig.326). In comparison to before, three more barrows are visible, all in the vicinity of Goliamata mogila – up to 3km away. The visible Polski Gradets tell is at 7.3km, while the neighbouring flat settlement of Goliama Detelina – 1.5km away - is not visible from the barrow.

Cost distance analysis (CDFig.327) shows the following results:

N of cost strip	Sites located in the cost strip
0	Malkata mogila
1	Tcherniova mogila – all locations, Barrow 4, Goliama Detelina flat site
2	Manchova and Ovchartsi barrows, Taniokoleva mogila – all locations
3	Kurdova mogila, MIBC 3-4
4	Galabovo tell, MIBC 1-2, Polski Gradets tell, Aldinova barrow
5	Iskritsa pit site, Iskritsa dwelling site, Atanasivanova mogila, Gudgova and Klisselika tells, Ovcharitsa I and II
6	Obrutchishte flat site, Mednikarovo tell, Polski Gradets pit site, Gonova barrow
7	KMBC

Table 6.7.2 Site distribution around Goliamata mogila

In summary, Goliamata mogila is located in a "barrow" landscape with one exception – a settlement in the first cost strip. The barrows up to the 2nd cost strip are visible from the site while the settlement is hidden. The only visible settlement – tell Polski Gradets - is in the 4th strip where the second group of possible contemporary settlement sites appears.

The logistical network is similar to the Gonova mogila network, except for the segments to some of the sites in the Northern part of the study area (CDFig.328). For details, see Appendix A, p. 207.

There is one important point that should not be omitted here. The path from Goliamata mogila to the Iskritsa dwelling site crosses (CDFig.344) the study area from South to North, rather than following the two main routes along the valleys, which is the path from the Iskritsa pit site to Goliamata mogila (CDFig.330). This is a confirmation of the pattern already observed in the paths from Polski Gradets tell to the adjacent Klisselika and Gudgova tells, in which two adjacent sites or two opposite edges of one and the same site, such as Iskritsa, could be reached via two totally different routes. This provides a logistical choice and alternative opportunities for outward and return journeys.

6.7.4 Summary and discussion

Goliamata mogila is the biggest barrow in the study area. The deceased consisted of all age -sex categories but the number of females in the fertile age (n = 10) was accepted to be high and was related to pregnancy and birth complications (Kunchev 1995). Certain palaeo-pathological conditions were recorded – *spondylosis* and *spondyloarthritis* in the spinal area. Some recent investigations (but not all) have argued that there is a link between the intensification of such kinds of conditions and agricultural activities (pers. comm., C.A. Roberts). In the case of Goliamata mogila, 75% of the skeletons with *spondylosis* and *spondyloarthritis* are males.

The evidence from Goliamata mogila matches in general the pattern of barrow burials discussed so far in terms of body position, the use of red ochre, grave goods and the presence of a mound. The difference from the other barrow burials is the relatively rare use of fire (the bonfire in the mound and ash and charcoal near grave 18) and the lack of any other features but graves (e.g. no pottery scatters or pits were detected in the barrow).

A major difference is the intensive deposition of pottery in the graves, registered in only one other case in the study area. – the MIBC. Last but not least is the presence of stelae – a phenomenon with no analogues in the study area. Stelae are found in Pit Grave barrows in North Bulgaria (Panayotov 1989) and this is one of the arguments which relates Goliamata mogila to this culture. The cultural and social aspects of the barrow will be discussed later (see p. 170-172) but here it is noteworthy that stelae were additional grave markers, apart from the grave mound itself. It is possible that the stones were used either to attract or to restrict certain types of post-burial activity. The red ochre painting on one of the stelae

emphasizes the importance of this mineral in the social practices in MI burial. Red ochre is usually associated with blood symbolism but its inclusion into pottery as temper and its use for painting stelae suggest greater symbolic complexity. Colour symbolism was also encoded in the sienite stele through the juxtaposition of the red ochre painting and the white stele.

Despite discrepancies in the stratigraphic data, some general trends can be observed in the burial sequence. The initial stage of barrow expansion was horizontal and contained graves 25 and 30-34. They were cut into the sterile soil at one and the same depth. Most probably these initial graves had mounds, as the second group of graves was said to be cut into a pre-existing mound.

The second stage was of vertical expansion, if we accept that the graves in the barrow also have also their own small mounds. Graves 27-29 were at the same depth as the first group. Most probably to the second group belong graves 20-24 but some particularities should to be mentioned. Graves 20 and 21 were at the same depth as all graves discussed so far but no pits were identified. It is possible that the bodies were placed on the ground surface. Such a claim is problematic for grave 21, however, since this was said to be in both the sterile soil and in the mound (Kunchev 1995:40). It seems that the initial burial surface was uneven, which rendered precise stratigraphic observations difficult. Therefore, it is possible to conclude that the barrow expansion was not only vertical and horizontal but also uneven. This would explain the fact that graves 20-34 were all found at a similar depth but at the same time were either in the sterile subsoil or in the mound.

The next stage of barrow expansion was again horizontal, as graves 16-19 were cut into the sterile soil. Four of the graves were in pits and one on the surface. The difference in the depth of the graves confirms the possible unevenness of the initial burial terrain.

The graves from these three stages all fall within the EBA1 period, so it is difficult to infer whether the barrow has initially expanded in horizontal and then in vertical mode or whether the barrow "growth" was both vertical and horizontal. Evidence from graves 29 and 34 show that most probably the dynamics of barrow expansion was simultaneously in area and height. Both graves could be dated towards the end of the EBA1 and N34 was in the sterile, while N29 was in the mound.

The fourth stage in barrow growth was vertical and consisted of graves 11-15. Two of them were in pits and three on the surface. Most probably, all of them had mounds that allowed vertical barrow expansion.

The following expansion stage was again horizontal, as graves 6-10 were dug into the sterile. As with stages 1-3, it is difficult to establish whether stages 4 and 5 were simultaneous or consecutive. The chronology of the graves puts them generally in the EBA.

The final stage of barrow formation cannot be definitely connected with vertical growth. Graves 1-5 were dug into the mound and four of them were securely dated to the LBA. It is not impossible that the graves had mounds, which would have contributed to the total height of the barrow.

During the first four stages, nine graves were made by digging pits into the sterile and one was laid on the surface. The remaining 12 graves were in the mound (one of which in the sterile as well); in five cases, the bodies were on the surface, in seven cases in pits. In the last two stages, the graves were formed only of pits cut both into the mound and into the sterile.

Therefore, it may be concluded that, for the burials in the sterile, it was important for the virgin soil to be dug out and replaced by the body. The six cases of surface deposition (one in the sterile, 4 in the mound and one in both) suggest that there were cases in which the integration of the deceased within the ancestors' barrow followed a different pattern, in which some of the dead most probably had the "right" to be buried in the mound (e.g, they were close kin) and the cutting into the antecedent deposit was not necessary; while others should gain this "right" by digging into the mound. The rest of the burials were dug into the ancestral mound on the one hand and had their own mounds on the other. This created a closed cycle of digging – filling – mound-forming, following a pattern which resulted in the re-establishment of the initial status quo.

The distribution of grave goods in the graves shows a pattern in which the burials in the sterile contain relatively more graves with grave goods than the graves in the mound (there were grave goods in 8 out of 15 graves in the sterile soil (53%) and in 6 out of 16 graves in the mound (38%)). It is also apparent that the percentage of the burials with grave goods in the sterile is greater than the graves without grave goods. Therefore, it may be concluded that the two commonest, yet contrasting, practices in Goliamata mogila were burials with grave goods in the sterile (n = 8) and burials without grave goods in the mound (n = 10). Together with the other two practices – burials in the sterile without grave goods (n = 7) and burials with grave goods in the mound (n = 6) - the evidence from Goliamata mogila show a complex pattern of post-mortem social message exchange, in which at least four ways of re-negotiation of social reproduction could be observed after the death of a particular member of the local society.

Most probably, an important part of these four burial patterns was the means of relating to the existing mound. Given the present state of the data, conclusive claims cannot be made but at least five patterns seem to present:

- 1) next to the barrow mound but with a) a separate or b) a common mound, 3) dug into the mound (which is comparable to the message of pits on the tells: Chapman 2000c) with or 4) without an additional mound and 5) laid on the surface of the mound and then covered by a mound.

The place of Goliamata mogila in the overall chronological and social development of the region will be discussed in Chapter 8. Here a few short comments are noteworthy. The first concerns the grave 12. Its stratigraphic position within the mound does not contradict its "late" chronology in EBA3 or even MBA because it is in the mound, showing that it is dug into a pre- existing barrow. The grave appears to be problematic only if the "zharovnia" rite is related to a particular culture. But if the evidence is viewed not from a culture-historical perspective but as a social practice, in the first place comes the continuity of the "ancestor" cult in which the link between the ancestors, newly dead and the living is re-emphasized in subsequent burials at one and the same place - in this particular case, a continuity which stretches back for more than 1,500 years.

Secondly, it is important to point out that several cross-references were made to the pottery from Ovcharitsa II. This relates the barrow and the enclosure not only in terms of chronology but also of production and distribution.

Lastly, if some of the vessels were deliberately made for the burial, it is not very likely that they were the products of exchange. This is not to say that exotic objects or imported pottery were not deposited in graves. Rather, it is to emphasize that if there was a message conveyed through the display of vessels as grave goods in the graves of Goliamata mogila, this most probably was not that sedentary societies produce special pottery for nomadic burial. I would argue that it is more likely that the very same society which buried the deceased had produced the pottery for the burial.

In summary, an essential element of Goliamata mogila was its specific and accumulating place value, built up through active use for more than 1,500 years. The viewshed analysis indicates increasing visibility of not only sites but also the surrounding landscape as the barrow increased in height. There were six stages of intensive expansion of the barrow that may have reflected important moments in the social life of the local inhabitants. The latter were a pottery-producing society that used and probably cultivated cereals, pulses and weeds as a temper component in the clay. Therefore, it may be concluded that these species were consumed as well. The main development of the barrow was during the EBA but there is no evidence to support population change from the Chalcolithic or population difference from the contemporary BA society (Ezero culture). Social dynamics at the end of the 4th and the beginning of the 3rd mill. BC in the study area developed a new concept of spatial arrangements, in which the barrow was central to the social landscape of the local inhabitants.

6.8 Malkata mogila (the small barrow)

6.8.1 General information and earlier studies

The barrow was excavated in 1986 and no later destruction was reported to be present. It was 2m in height and 18 x 21m in diameter. Six graves altogether were found (AFig. 6.8.1A). Five of them were dated to the LBA and one to the EBA. The site has received only one short publication (Kunchev 1991).

Archaeological evidence

The data from the publication is summarized in Table 6.8.1. The site diary contains some information, which was excluded from the final publication but will be utilized here.

Grave number	Stratigraphic position	Body position	Object in the graves	Red ochre	Grave feature
1	In the mound	Crouched on right	Fragment of bronze sword, fragments of small vessels (AFig. 6.8.1D)	No	No
2	In the mound	Cremation	A clay jug, a hair pin, spindle whorl (AFig. 6.8.1E - G)	No	Pit
3	In the mound	Cremation	A clay jug, bronze arrowhead (AFig.6.8.1C, H)	No	Pit
4	In the mound	Cremation	Fragmented cup with handles	No	Pit
5	In the mound	Crouched on left	A clay cup (AFig. 6.8.1B)	No	No
6	In the sterile soil	Crouched on back	no	Powder and pieces	Pit with organic pad and wooden cover

Table 6.8.1 Grave data from Malkata mogila

In the site diary, a pit 70cm in depth and 2m in diameter was mentioned as present. It was filled with black soil and cultural residues, whose nature, however, was not specified. Two more pits were excavated that contained no archaeological material.

Although the publication claims lack of red ochre in most of the graves, the site diary mentions soil colouring, most probably with red ochre, in graves 2 - 5.

The last mismatch between the publication and the diary is the sloping of the data for graves 4 and 6, as well in the site diameter, which is mentioned to be 30m in the diary.

6.8.2 The site and its surrounding according GIS analysis

The site is located 500m to the northwest of Goliamata mogila. It is on a hill at 157-168 masl (CDFig.345), on a $1\text{-}2^{0}$ slope (CDFig.346) with a North West aspect (CDFig.347). The visibility from the site is generally the same as from Goliamata mogila but more restricted towards the Eastern hills (CDFig.348). The viewshed from the site with an additional 2m height is slightly improved in all previous directions, more significantly to the Eastern parts, as with the visibility from Goliamata mogila towards this part of the study area (CDFig.349). The viewshed with 3m additional height to the surface was performed to check the visibility status in case the barrow was reduced in size by some later destruction (CDFig.350). The view from 3m height is the same as the previous two, with little improvement in any previously visible areas and it is very similar to the visibility from Goliamata mogila (see above).

The close distance between Goliamata and Malkata mogili determines not only the similar visibility but also the same cost surface results (CDFig.351) and logistical network (CDFig.352).

6.8.3 Summary and discussion

The pattern in Malkata mogila shows that the LBA cremations are in pits, while the LBA inhumations are on the surface. So it is likely that the pits were considered as natural "urns" for the burnt remains. All the LBA graves have grave goods, in contrast to the initial EBA burial that has no grave goods.

6.9 Goliama Detelina flat site

6.9.1 General information and earlier studies

The Goliama Detelina flat site was excavated in 1982-83. Prior to the investigations, the humus and a large part of the cultural layer had already been swept away by mining work. The total area of the site was claimed to be 2.5ha, of which 0.65ha was investigated in three sondages (AFig. 6.9.1A - B). The results of the excavations were summarized in a general article on the settlement pattern of the region (Leshtakov et al. 2001). The site was dated to the end of the EBA2 and EBA3 on the basis of regional pottery similarities. Scattered Medieval materials and AD19th century burials have also been found. The following description summarizes the data from the publications, part of the site documentation and my own museum study.

Archaeological evidence

The best-preserved cultural layer was 70cm thick and was supposed to consist of two building horizons. However, there is definite evidence for only one occupational level. Remains of six (seven according to site reports) dwellings have been excavated; it was possible to define the ground-plans for just two of them (AFig. 6.9.1A). They were rectangular structures, probably with two rooms, and with the wattle and daub construction and beaten clay floor typical for the region. In all dwelling remains, traces of ovens were found. Altogether 13 ovens have been excavated at the site. Some of them have traces of several reconstructions that allowed the excavators to conclude a long-lasting habitation. Five of the dwellings were said to contain burnt house rubble. The house inventory evidence is summarized in Table 6.9.1. Five pits were also excavated at the site, each claimed to contain a small amount of BA material. Comments on the pits and their contents were not made in the publications.

House No	Location	Stone tools	Flint tools	Antler/ bone tools	Clay objects	Vessels	House rubble
1	Sondage 1 G1/2-H1/2	Yes		Fragments of 3 antler hoes	Loom weights, whorls, fragmented Figurine	Fragmented	Yes – not mentioned to be burnt
2	Sondage 2 A1-3/B1-3	pestles, whetstones, polishers, grinding stones, fragments of 5 axes,	yes		Spindle whorl, wheel model, 3 loom weights	Fragmented and whole	Massive presence of burnt rubble
3	Sondage 2 B3/4	Yes	Yes	Yes	yes	Fragmented and whole	Not mentioned
4	Sondage 2 B4/C4	Yes	Yes	Yes	Yes	Fragmented and whole	Large amount of burnt rubble
5	Sondage 3 A1/A2	Axes, whetstones	Yes	-	Spindle whorls	Fragmented	Large amount of massive burnt rubble
6*	Sondage 3 19/20 – 20/21	Pestles, axes	Yes	-	Loom weight, 5 wheel models	Fragmented and 4 restorable	Large amount of burnt rubble
7	Sondage S20/21	-	-	Bones but not tools	-	Fragmented	Massive presence of burnt rubble

Table 6.9.1 House inventory data from Goliama Detelina flat site

The cultural layer in general consists of the same artifacts mentioned in Table 6.9.1. Tables 6.9.2-4 summarize the artifactual material studied so far. During my museum study, I was able to establish that there were 9 large boxes of pottery and some animal bones, which still have not been studied in detail.

Type of tools	Pestles	Adzes	Whetstone	Axes	Polishers	Grinding stone	Cylinders	Maces
No of tools	25	2	3	29	26	3	6	2

Table 6.9.2 Stone tools from Goliama Detelina flat site (AFig. 6.9.2 J J- L)

Type of objects	Whorls	Net-weights	Loom weights	Spoons	Wheel models	Figurines
No of objects	31	30	15	2	12	1

Table 6.9.3 Clay objects from Goliama Detelina flat site (AFig. 6.9.2A - I)

Type of objects	Worked horn/antler	Worked bone	Bone awls
No of objects	10	5	5

Table 6.9.4 Bone and antler tools from Goliama Detelina flat site (AFig. 6.9.2M - O)

* the object are mentioned to be found in the square/ sondage

In addition to the data from the Tables there were also 25 flint tools, two metal tools and a *Cardium* shell – presumably from the Black Sea. Publication illustrations present some fragmented stone, clay and bone/horn tools (AFig. 6.9.2**)**. During my museum study, I ascertained that some of the objects published as whole were, in fact, fragmented (e.g. AFig. 6.9.2C). In addition, there were at least 10 fragmented vessels in the museum display in Nova Zagora and 18 out of the 30 vessels prepared for detailed publication were also fragmented (Gaydarska 2004 : AFig.6.9.2). I was not able to study the content of the 9 boxes of material because of the conditions of the museum storerooms.

All the three published stone tools are fragmented, each made of a different type of rock. Petrological investigations, however, have not been made. Four more fragmented stone tools were on museum display. One of the maces showed traces of the production process – the shaft was not polished yet. The relatively large number of stone tools (n = 96), the evidence for their production (e.g. the drilled-out cylinders and the incomplete mace) and the presence of fragments suggest on-site production and distribution at Goliama Detelina. These remains may also point out to a certain type of depositional practice, in which keeping the "production waste" and the broken tools at the site had specific meaning, linking present tool-users to past tool-makers.

6.9.2 The site and its surrounding according to GIS analysis

The site is located on a terrace at 120-135 masl (CDFig.353), on a 4-5^0 slope (CDFig.354) with a North West aspect (CDFig.355). The general visibility from the sites is low (CDFig.356). There is a consistent view over the area North of the site – along the valley and its Northern parts. Single spots are visible to the Northeasternmost part of the study area. Also visible is the gully 7.5km South East of the site. Three barrows are visible from the site.

Cost distance analyses (CDFig.357) are summarized in Table 6.9.5.

N of cost strip	Sites located in the cost strip
0	Tcherniova mogila – all locations
1	Malkata, Goliamata, Manchova and Ovchartsi barrows
2	Barrow 4, Taniokoleva mogila – all locations
3	Galabovo tell, Kurdova mogila, MIBC 3-4
4	Atanasivanova mogila, MIBC 1-2, Polski Gradets tell, Aldinova barrow
5	Obrutchishte flat site, Mednikarovo tell, Iskritsa pit site, Iskritsa dwelling site, Gudgova and Klisselika tells, Ovcharitsa I and II, Polski Gradets pit site, Gonova barrow
6	KMBC

Table 6.9.5 Site distribution around Goliama Detelina

It is interesting to point out that, although the Tcherniova barrow has the easiest access from the settlement, it is in fact further from the barrows in the first cost strip.

In summary, Goliama Detelina settlement is surrounded by barrows, while the possible contemporary settlements are relatively remote. The location of the barrows in zones with different accessibility may have been related to the possible link between settlements and barrows (e.g., Tcherniova mogila is more likely to be linked to the Goliama Detelina site rather than to Barrow 4). Another possible argument for this settlement-barrow relation could be the visual connection. In such a case, three barrows (Tcherniova mogila– all locations, Manchova mogila and Taniokoleva mogila – all locations) located in different zones of accessibility appear as possible candidates for the place of the Goliama Detelina site. Tcherniova mogila appears in both cost distance and visual variants of connection, which may be interpreted as a definitive link between the barrow and the settlement.

The logistical network (CDFig.358) repeats in general the Gonova mogila network. The individual paths to some of the sites in the Northern part of the study area follow those in the Galabovo tell network due to the direction of movement. The segments to Goliamata (CDFig.342) and Malkata mogila (CDFig.359) and Kurdova mogila (CDFig.360) are directly from the site rather than following the main North route. Details on the logistical network of Goliama Detelina settlement are provided in the Appendix A, p. 207 - 208.

A comparison between the visibility patterns of Goliamata mogila (hence Malkata mogila and Barrow 4, which share the same visibility) and the Goliama Detelina settlement with one and the same sites in the Northern part of the study area shows better landscape and site visibility from the paths than from the barrow. This is probably due to the better static viewshed and more Eastern location of Goliamata mogila, as well as to the shorter paths from the settlement in comparison with the paths from the barrow. However, it is very important to point out that, despite the reduced landscape and site

visibility, most of the sites and a large part of the landscape are still visible from the Goliama Detelina logistical network. This is a confirmation of the pattern observed so far in all the viewshed analyses of logistical networks, in which sites appear to be located in areas from which they can be seen while walking through the landscape.

Resources and land use

Goliama Detelina settlement is one of the sites with the most severe surrounding destruction; 3364 ha of the area up to 5km around the site is now under current mining operations and therefore has lost its soil. Table 6.9.4 and CDFig.368 show the present soil distribution around Goliama Detelina site.

Distance from site	Without soil	Meadow soil	Smolnitsa	Cinnomonic forest soil
0-500m	61ha	8ha	-	-
500 -1000m	160ha	74ha	14ha	-
1000 -1500m	247ha	70ha	80ha	-
1500 -2000m	345ha	101ha	73ha	10ha
2000 -2500m	368ha	98ha	183ha	50ha
2500 -3000m	395ha	109ha	341ha	30ha
3000 -3500m	400ha	117ha	482ha	35ha
300 -4000m	408ha	89ha	561ha	79ha
4000 -4500m	463ha	75ha	596ha	152ha
4500 -5000m	517ha	124ha	655ha	177ha

Table 6.9.6 Soil distribution around Goliama Detelina site

The exact original soil cover of the huge destroyed area is not possible to reconstruct. On the basis of the present soil distribution shown above, however, some suggestions can be made. Smolnitsa was most probably spread to the North East, while, to the South South West, smolnitsa along with cinnomonic forest soil was probably distributed in a mosaic-like pattern.

Exploitation area

The area of the site is 2.5ha, which may have accommodated 215-240 inhabitants. The necessary annual amount of crop – 45,150 - 50,400kg – requires 225-252ha of arable land. Excluding the area without soil, the necessary arable soil is available in the area up to 2000m from the site. As in previous case studies, one third of the land was classed as fallow, thus leaving 275ha for actual annual cultivation. Such a figure is very close to the upper edge of the range of necessary arable land (252ha), leaving very little room for natural vegetation. I should assume that exploitation area did not exceed the 2000m limit since 813ha of natural soil cover was destroyed, which most probably was either cultivated or covered by natural vegetation.

The pattern of soil distribution suggests crop rotation, in which different spots of arable land around the site in the 2000m limit were cultivated in sequence.

6.9.3 Summary and discussion

The devastated state of the site at the start of its investigations determined to a great extent the scarcity and poor condition of the archaeological features and artifacts. The consistent evidence for fire in all the dwellings strongly suggests the social practice of burning houses. Accidental or hostile fires are not impossible but, on the basis of the case studies discussed so far, which indicate the probability of controlled and managed fire, I should rather suggest that this was also the case at the Goliama Detelina settlement. Deliberate fragmentation was practiced at the site, as revealed by the inventory of the houses and the numerous fragmented objects. It is possible that some structured deposition has taken place at the site in the five pits but, until the site is published in full, further comments on deliberate patterns of deposition cannot be made. Conclusive claims for the site catchment are also not possible to make but the *Cardium* shell points to exchange relations with the Black Sea or other maritime areas.

6.10 Tcherniova mogila

6.10.1 General information and earlier studies

The barrow was excavated in 1996, when the edge of mining operations lay 40m from the site. At that time, the barrow was 3m in height and 45 x 50m in diameter. Almost in the centre of the mound, there was a robber pit that seemed not to have destroyed any archaeological features. Two paths crossed the Eastern part of the barrow, but without doing serious damage to the mound. The results of the excavation are being prepared for publication. Preliminary reports date the site to the EBA1/2 and relate it to the Pit Grave culture (Panayotov et al., n.d.). For details on the archaeological evidence from the site, see Gaydarska (2004 : 293 - 294).

6.10.2 The site and its surrounding according to GIS analysis

The barrow is located on a terrace at 91- 115 masl (CDFig.369), on a 1-2^0 slope (CDFig.370) with a North Western aspect (CDFig.371). The general visibility from the site is low and scattered over the valley and Eastern hills (CDFig.372). Five barrows, one EBA flat site and Polski Gradets tell are visible from the barrow. It is important to point out that, despite the general limited visibility over the landscape, a relatively high number of sites is visible from the site. Therefore, it is likely that the Tcherniova barrow location was at least partly determined by the location of any or all of these seven sites.

The viewshed with an additional 3m improves visibility in all previous directions but it remains low and scattered (CDFig.373). The same sites are visible again. Generally the same is the panorama from an additional 4m barrow height, which means that, even if some later destructions have happened, that did not affect the visibility from the barrow (CDFig.374).

Three alternative places were randomly chosen in the same locality (CDFig.369) and viewshed analyses have been conducted. The four points are in different cells, which means that the panoramas have been performed from at least 4ha within the possible location area of Tcherniova mogila. Cost surface analyses have not been repeated for the alternative places, as the outcome cost surface grids are very similar. All four points share one and same altitude, two of them are on a flat surface, the other two on a 1-2^0 slope (CDFig.370). The aspect falls within a range of West to North West (CDFig.371).

The viewshed analyses showed the same pattern of general low and scattered visibility (CDFig.375), (CDFig.376), (CDFig.377), (CDFig.378), (CDFig.379), (CDFig.380), (CDFig.381), (CDFig.382), (CDFig.383).

The four variants of visibility from the site share similar views, with minor differences in visible areas. It is important to emphasize that, despite the differences in landscape panorama, the sites visible from the four locations are one and the same. There is only one exception that concerns the Southeasternmost location of Taniokoleva mogila (one of the four possible locations), which was most probably in an area invisible from Tcherniova mogila (in two cases the point was on the edge of an visible/invisible area, while in the other two it is not visible at all). This is a confirmation of the above-stated hypothesis that the location of Tcherniova mogila was related to the seven sites visible from the barrow.

The lack of precise coordinates for Tcherniova mogila does not affect the general conclusion about the location of the barrow, since all the possible locations show a very similar landscape and the same site visibility characteristics.

Cost surface analysis results (CDFig.384) shown in Table 6.10.1 are very similar to the Goliama Detelina case study.

N of cost strip	Sites located in the cost strip
0	Goliama Detelina flat site
1	Malkata, Goliamata, Manchova and Ovchartsi barrows
2	Barrow 4, Taniokoleva mogila – all locations
3	Galabovo tell, Kurdova mogila
4	Atanasivanova mogila, Iskritsa pit site, Iskritsa dwelling site, MIBC, Polski Gradets tell, Aldinova barrow
5	Obrutchishte flat site, Mednikarovo tell, Gudgova and Klisselika tells, Ovcharitsa I and II, Polski Gradets pit site, Gonova barrow
6	KMBC

Table 6.10.1 Site distribution around Tcherniova mogila

In summary, Tcherniova mogila was located in an area of immediate accessibility to EBA settlement, followed by two cost zones of barrow distribution. Only one of the surrounding six barrows is not visible from the site (Barrow 4).

The logistical network is a mixture of the Galabovo and Gonova mogila networks (CDFig.385). The main South and North routes follow the Galabovo case, while the routes through the mines to the sites in the Sokolitsa valley and to MIBC echo the Gonova mogila case. Special attention was paid to the paths and their views towards the six neighbouring sites (five barrows and one settlement[1]) in order to test the pattern of inter-site visibility observed in the GIS analyses of the very same sites. For further details on Tcherniova mogila logistical network, see Appendix A, p. 208.

The comparison of the visibility pattern between the Tcherniova mogila case study and the Goliama Detelina

[1] The path to the Goliama Detelina settlement is discussed in Appendix A, p. 207.

case study highlights some differences. The better landscape panorama from the Tcherniova mogila logistical network to the Northern and Eastern parts of the study area, which provides visibility over at least two more sites, is probably due to the location of the barrow. However, the Tcherniova mogila case study confirmed the already observed and discussed pattern of very high site intervisibility from the paths, despite the differences in landscape visibility.

Tcherniova mogila is not published yet but I had the opportunity to see some of the grave goods from Grave six. The shape and material of the gold and silver pendants resemble the ornaments of another barrow in Maritsa Iztok – Kamenna mogila (Stone barrow)(Boyukliev 1964).

The barrow was excavated in the early 1960s and soon after the area was totally destroyed by the mines. The earliest maps of the region that were suitable for digitizing were from the mid-1970s. I was not able to locate either the locality or the place of the barrow on any of the presently available maps of the study area; this excluded Kamenna mogila from the GIS analyses. However, the barrow contains important evidence for burial practices in Maritsa Iztok and is therefore included in the archaeological discussion.

Kamenna mogila was located 2.5 km South of village Troyanovo (now destroyed). Three more small barrows were situated in the same locality. The four mounds were related to the settlement located 400m East of Kamenna mogila.

The barrow was 4m in height and 42m in diameter. The initial grave was almost in the centre of the mound and dug into the sterile. The body was crouched on the back. Above and under the bones, there were traces of red ochre – powder and small pieces. Silver earrings, forming a pair, were found on each side of the skull. A mound was build above the grave.

A second burial was dug into the mound when it was 1.20m high. The grave lay 2.5m South East of the first burial. The body was extended on the back and laid in a pit. There was red ochre under and above the bones as well. There was also a large quantity of ash and charcoal under the body. The soil had no traces of burning, which made the excavator conclude that the fire was not lit in the grave pit. A pair of gold pendants – identical to the silver ones from grave 1 - was also found. In the first publication, the two graves were dated to the 8th-7th c. BC (Boyukliev 1964) but later were re-dated to the EBA and assigned to the Pit Grave culture (Panayotov 1989).

Fifteen later graves were excavated in the mound, none of which contained grave goods. Traces of wooden coffins were found around the bodies. One or two sandstone rocks were discovered on the heads or legs of the deceased. The villagers relate that stones used to be removed from the mound – a tradition that established the name of the barrow. The lack of dating material left the 15 graves without a reliable chronology.

The evidence from Kamenna mogila is important, as it confirms burial practices in Maritsa Iztok which have already been commented in previous case studies the type of head ornaments, the deposition of red ochre and the use of fire/fire products in the mound.

6.10.3 Summary and discussion

The lack of plans and sections makes the reconstruction of the burial sequence very difficult. My own analysis based on the feature description, however, has shown a certain pattern. At least four phases of barrow formation could be observed at Tcherniova mogila. Most probably the first grave was grave 6, which was covered by the initial mound. Two graves (Nos 4 & 5) were dug into the mound, as the base of grave 5 reached the sterile as well. All the three burials were in pits, which underlines the practice of deliberate digging into the virgin soil or the ancestral mound. Some unevenness of the terrain is likely to be present, as in the case of Goliamata mogila, since grave 4 has a depth of 250cm but does not reach the sterile. Most probably, graves 4 and 5 had one common mound or two separate mounds that contributed to both the vertical and horizontal expansion of the barrow. The latter is assumed on the basis of graves 1 and 2, which are 3 to 6 m East of graves 4 and 5 and within the mound.

The last phase of barrow formation (grave 3) did not expand the barrow size since it was 5cm below the site datum. The last three burials do not have traces of pits, which probably means that the bodies were laid on the surface. Extra earth was later added in the case of graves 1 and 2, while in grave 3 the body was only covered by a thin layer of soil.

The barrow evidence shows a consistent pattern of the "wrapping" of the bodies (except grave 4) in organic shrouds, which is not very common in Maritsa Iztok but which is well attested in the Pit-Grave culture (Panayotov 1989). There is a consistency in red ochre deposition in contrast to the variability of grave goods. Some memorialising practices accompanying the burial are suggested by the presence of the two pits.

6.11 Manchova mogila

6.11.1 General information and earlier studies

Manchova mogila was excavated in 1976 and has only one short publication (Kunchev 1991). Thirteen graves all together were discovered in the barrow (AFig. 6.11.1a), five of which were dated to the LBA on the basis of the pottery found in them. Another six burials were dated to the EBA in general. An attempt to establish a more

precise grave sequence was made through relating the barrow to the Goliama Detelina flat site dated in EBA2/3 (Dimitrov 2000). Secure evidence for the chronology of the early graves in the barrow is, however, still missing.

Another settlement with which the barrow was suggested to be associated was located 150-200m East of the barrow (Maritsa Iztok Catalogue of sites, Dimitrov 2000). The site was not excavated and currently it is under a spoil-tip. It was dated to the EBA in general, on the basis of pottery found during field survey. The head orientation of some of the deceased pointed towards the possible settlement location, which was used to support the hypothesis for the barrow/settlement link (Dimitrov 2000). Given the present state of the data, such speculation can neither be supported nor opposed.

Finally, the barrow was related to several adjacent barrows, following the Bulgarian interpretative pattern in which neighbouring mortuary monuments are united in one necropolis that is subsequently related to a settlement. In this particular case, there are a few problems with the possible barrow cemetery that merit some comments.

The first problem is the number of the barrows. In some of the references, four barrows are mentioned (Dimitrov 2000), while, in others, the number is six (Kunchev n.d.). The second problem concerns the location of the barrows. They are said to be located on the hill ridge South South West of the village of Malka Detelina (now destroyed). An exact location was not specified and the contour map shows at least 10 natural hills in the above-mentioned direction. Last but not least are the names of the separate barrows in respect to their inter-location. Two more burial mounds have been excavated (Taniokoleva and Kurdova) and one was destroyed by the mines. Which is which, however, on the 10 possible hills is not clear. These three problems create difficulties for GIS analyses and comments on landscape and inter-site relations but discussions on archaeological evidence are still possible. Taniokoleva and Kurdova mogila are going to be discussed later (see below p. 147-149) but the general pattern of inter-barrows and barrow/settlement location is not possible to reconstruct given the present state of the data.

Archaeological evidence

The data for the burials in Manchova mogila is summarized in Table 6.11.1. Graves 7 and 8 are dated to the Roman period and are not included in the Table. The primary burial was considered to be grave 13, which was followed by grave 12.

No	Stratigraphic position	Body position	Object in the grave	Red ochre	Grave feature	Depth	Date
1	In the mound	Crouched	Kantharos (AFig. 6.11.1A)	No	No	150	LBA
2	In the mound	Crouched	No	Powder	No	140	LBA
3	In the sterile	Crouched	Restorable cup with missing handle (AFig. 6.11.1C)	Powder	No	260	LBA
4	In the sterile	Crouched	Fragmented cup (AFig. 6.11.1B)	No	Pit; spot of ash in the North part	200	LBA
5	In the sterile	Crouched	Kantharos (AFig. 6.11.1D)	No	Pit	621	LBA
6	In the sterile	Crouched	No	No	Pit	300	EBA
9	In the sterile	Crouched	No	No	No	225	EBA
10	In the sterile	Crouched	No	Powder	No	250	EBA
11	In the sterile	Crouched	No	No	No	250	EBA
12	In the sterile	Stretched on back	No	Powder	Pit	260	EBA
13	In the sterile	Crouched on back	No	Powder	Pit	310	EBA

Table 6.11.1 Evidence from Manchova mogila

There is some discrepancy in the data sources (published text, illustrations and catalogue: (Kunchev 1991)). The graves in the mound were claimed to be four in the text, the illustration has five graves and the catalogue mentions only two graves present in the mound. Apart from graves 1 and 2, for which the information is consistent, I would assume that graves 9, 10 and 11 were also in the mound because a) their remains are illustrated and b) their depth is insufficient to reach the sterile. However, it remains unclear how graves of similar depth (Nos. 3, 4 and 12) were in the sterile, if, as stated, the burial mound was 3m in height. The only possible explanation is that the initial burial surface was uneven and the graves had their own small mounds later incorporated into one common heap.

Such an explanation gains further support from the presence of LBA burials in the sterile, while there were
Such an explanation gains further support from the presence of LBA burials in the sterile, while there were EBA graves in the mound. In other words, the LBA burials in the sterile (Nos. 3 - 5) were made next to the earlier barrow, which was small and compact.

6.11.2 The site and its surrounding according to GIS analysis

Manchova mogila was the only barrow in Malka Detelina lands that has its name on the maps digitized for the purposes of the current study. This has made the GIS analysis of Manchova mogila possible.

The barrow was located on a hill at 140-164 masl (CDFig.394), with a North East aspect (CDFig.395) and a 4-5^0 slope (CDFig.396). The visibility from the site is good over the valley and with a consistent strip-like panorama over a gully and a hill South East of the site (CDFig.397). There are also three tiny visible strips to the South of Manchova mogila, as well as scattered spots over the Eastern hills and the Northeasternmost part of the study area. Goliamata and Malkata mogila, Kurdova barrow, Tcherniova mogila (all four locations) and the Goliama Detelina flat site are all visible from the barrow. One of the possible locations of Taniokoleva mogila is on the edge of a visible/invisible cell, while the other three are not visible at all.

The viewshed with an additional 3m that correspond to the height of the barrow is generally the same with one curious difference – the previously visible areas at the central part of the study region have become less visible (CDFig.398). Few visible spots to the North East part of the study area have appeared. The same five sites remained visible.

The pattern of diminishing visibility over the central part is repeated in the viewshed with an additional 4m-barrow height (CDFig.399) (see p. 42).

The cost distance analysis results (CDFig.400) are summarized in Table 6.11.2:-

N of cost strip	Sites located in the cost strip
0	Taniokoleva mogila 1
1	Goliama Detelina flat site, Taniokoleva mogila 2-4, Tcherniova mogila – all locations
2	Malkata, Goliamata, Ovchartsi and Kurdova barrows, Barrow 4
3	MIBC
4	Galabovo tell, Polski Gradets tell, Aldinova barrow
5	Atanasivanova mogila, Iskritsa pit site, Iskritsa dwelling site, Gudgova and Klisselika tells, Ovcharitsa I and II, Gonova barrow
6	Obrutchishte flat site, KMBC, Mednikarovo tell, Polski Gradets pit site

Table 6.11.2 Site distribution around Manchova mogila

In summary, at the time of construction, the barrow was surrounded by two barrows and one settlement, though it is possible that the settlement appeared later than Manchova. The barrow distribution dominates the first four cost strips, where the next settlements appeared. The pattern is more dispersed during the LBA, when the closest contemporary sites were two barrows in the second cost strip. The next possibly contemporary sites were in the most distant accessibility zones (one or two settlements in the 5th cost strip, two mortuary sites in the last cost strip).

The logistical network represents a combination of the Gonova and Galabovo sites networks (CDFig.401) (see Appendix A, p. 208, for details).

In summary, the combination of different although related landscape visibility with recurrent site visibility is characteristic of the viewsheds of the Manchova mogila logistical network.

6.11.3 Summary and discussion

All but one of the LBA burials contained ceramic grave goods, in contrast to the EBA burials that had no grave goods at all. Both fragmented and whole vessels were deposited in the graves and other forms of deposition (pits, scatters) were not mentioned. There is only one case of the use of fire products in LBA grave 4. Half of the EBA graves (10,12 and 13) had red ochre, as well as two of the LBA graves (2 and 3). Such diverse use of red ochre is observed only in this particular barrow.

The EBA graves in the sterile are in pits, while the ones in the mound are on the surface. The same pattern (with one exception) is also valid for the LBA burials.

In summary, the reconstruction of the barrow formation has determined four stages of vertical and horizontal expansion. The initial graves (6, 12 and 13) were dug into the sterile. It is not possible to establish their sequence and hence the nature of the mound (common or separate). The next EBA burials were on the mound surface and

most probably had their own small mounds. The later LBA burials were dug into the sterile (graves 4 and 5) or laid on the surface (grave 3) next to the existing mound that, at a certain moment, was covered by a common mound (viz., covering all the EBA and the three LBA graves). Finally two more burials have taken place on the surface of the expanded mound that had contributed to the ultimate growth of Manchova mogila.

6.12 Taniokoleva mogila

6.12.1 General information and earlier studies

The barrow was excavated in 1977 and shares the summary publication of the barrows in the Maritsa Iztok region (Kunchev 1991). Altogether, nine burials have been excavated – seven inhumations and two cremations. Graves 6 and 9 were dated to the EBA (AFig. 6.4.1C); grave 4 to the Hellenistic period and the rest were from the Roman period. An additional mound was made after the Hellenistic burial.

Archaeological evidence

Grave 6 was a pit dug into the sterile at 230cm. The deceased was in a crouched position, with no red ochre or grave goods.

Grave 9 has the same stratigraphic parameters (pit - 230cm in the sterile) and was considered as the initial burial in the barrow. The deceased is crouched on the left side. There were no traces of red ochre. According to Kunchev (1991), a fragmentary urn with a tongue handle in this grave has parallels in tell Ezero. On this basis, the initial burial was dated to the EBA2 period.

The head orientation of the deceased points towards the Goliama Detelina flat site, on which basis it was suggested that the barrow is related to the settlement (Dimitrov 2000).

6.12.2 The site and its surrounding according to GIS analysis

Taniokoleva mogila is one of the barrows with a problematic location (see above p. 145). Four different locations are consistent with the only locational information – "200m West of the village of Malka Detelina". All of them are located on a hill at 140-164 masl (CDFig.414). Two of the possible locations are on a 4-5^0 slope, the other two on a 1-2^0 slope (CDFig.415). Three of the places have a North Easterly aspect, the fourth a Southern aspect (CDFig.416). GIS analysis was performed for all four locations. There are differences in both landscape and site visibility in these viewsheds. Taniokoleva 1 (which represents the barrow in the other GIS analysis) has a good panorama over the areas up to 5 km to the North West and up to 2.5 km to the South East of the site, which provides visibility over four barrows and one EBA settlement (CDFig.417). The panorama with an additional 2m (the actual height of the barrow) (CDFig.418) and 3m (if the barrow suffered some destruction) (CDFig.419) has the same site visibility, while the landscape to the South East is not visible any more (diminishing visibility is discussed in section 6.11.2). Taniokoleva 2 and 3 share similar visibility (CDFig.420), (CDFig.421), which is good over a gully and a hill in the central study area, patchy to the Eastern hills and with visible spots from 2.5 to 5 km North West of the site. Two barrows and one EBA settlement are visible from these two possible locations. The viewsheds with 2m and 3m additional height do not differ significantly from the viewsheds conducted from the surface (CDFig.422), (CDFig.423), (CDFig.424), (CDFig.425). It was not possible to perform visibility analysis for Taniokoleva 4, probably due again to the already mentioned landscape particularities[2].

In summary, the exact location of Taniokoleva mogila was important for both its landscape and site visibility. The presence of Tcherniova mogila (all locations), Kurdova mogila and Goliama Detelina flat site in all the tested viewsheds may be interpreted as a deliberate pattern of barrow location, which provides a panorama over the three adjacent sites.

A cost surface analysis was made only for Taniokoleva 1 (CDFig.426) since, in previous cases (e.g., both Iskritsa sites), it was observed that adjacent sites have very similar cost distance results. The Taniokoleva 1 results are summarized in Table 6.12.1.

[2] Constant error messages used to appear in each viewshed performed from the surface. When 1m and more were added to the surface, the visibility from the site was similar in direction but lesser in extent than the visibility from Taniokoleva 2 and 3. Due to time restrictions, the attempts to solve the problematic surface visibility of Taniokoleva 4 were abandoned.

N of cost strip	Sites located in the cost strip
0	Manchova mogila
1	Goliama Detelina flat site, Kurdova mogila, Tcherniova mogila 2/3
2	Malkata, Goliamata, Ovchartsi barrows, Barrow 4, Tcherniova mogila 1 and 4, MIBC
3	Iskritsa dwelling site
4	Galabovo Gudgova and Klisselika tells, Atanasivanova mogila, Iskritsa pit site,
5	Mednikarovo tell, Obrutchishte flat site, Aldinova barrow, Ovcharitsa I and II, Polski Gradets tell, KMBC
6	Gonova barrow, Polski Gradets pit site

Table 6.12.1 Site distribution around Taniokoleva mogila

In summary, Taniokoleva mogila was surrounded by barrows, the closest of which (in terms of cost) were visible from the site (mostly from Taniokoleva 1). The Goliama Detelina settlement is both visible and with easy access from the barrow, which may be interpreted as indicative of a possible link between the two sites.

The logistical network of Taniokoleva mogila (CDFig.427) consists of two main South and North routes, two paths that cross the study area from North to South, and four short individual tracks to adjacent sites. Apart from the path to Kurdova mogila (see p. 209), all of the other tracks were discussed in previous case studies.

6.12.3 Summary and discussion

It important to point out that no red ochre was found and the deposited pottery was fragmented. Taniokoleva mogila is more likely to be connected with Goliama Detelina flat site, as both sites appear to be coeval within the EBA2 period. Such a claim is supported by the visual and accessibility connection between the two sites.

6.13 Kurdova mogila

6.13.1 General information and earlier studies

A barrow with the name of Kurdova mogila was excavated in 1977 (AFig. 6.4.1D). Apart from the difficulties in identifying the barrows in the village territory of Malka Detelina, there is an additional problem with this particular barrow. There is one burial mound with the same name (or with the consonant "d" is replaced by "t") in the village territory of Ovchartsi. The latter is marked on the maps as a reliable toponym, while the barrow near Malka Detelina has no certain location. After detailed cartographic investigations, I can suggest that there were two barrows with a similar, or one and the same, name. The excavated barrow is not the one marked as a toponym and its exact location is not possible to establish. The barrow location was mentioned as 2 km South West of the village of Malka Detelina, while at the same time considered to belong to the barrow cemetery immediately West of the same village. As in the case of Taniokoleva mogila, the lack of location data affects the GIS part of the analysis but the archaeological evidence is still available for discussion.

However, in the case of Kurdova mogila, there is a huge discrepancy between the publication and the site diary. A recent detailed investigation has reconciled the data (Dimitrov 2000). The following description is a summary of this latest study.

Archaeological evidence

The burial evidence from Kurdova mogila is summarized in Table 6.13.1. All the graves are generally dated to the EBA but no arguments were presented. I assume that such a chronology was based on the common parallels of the burials in the Pit Grave culture.

Grave No	No of individuals	Stratigraphic position	Position of the body	Grave feature	Red ochre	Grave particularities
5	5	Initial	Crouched	Pit	N/A	Two individuals on the pit base, the other three above them
4	1	Secondary	Crouched	Pit	N/A	Three flint tools in the chest area
3	1	Secondary	Crouched	Pit	N/A	A dog skeleton near the head
2	1	Secondary	Crouched	Pit	N/A	-

Table 6.13.1 Burial evidence from Kurdova mogila

The mound was said to be created in one single episode, which most probably means that, after the initial mound, no more vertical expansion has occurred. The secondary graves most probably were dug into the mound and the pits were covered with only a thin layer of soil. A domed

oven and two pits were also found in the mound. A part of the dome has been preserved up to 10cm in height. A large quantity of ash and charcoal was discovered in the oven. In front of the oven, there was one of the pits, which contained no archaeological material at all. The other pit was 150cm East of grave 5 and also contained a large quantity of ash and charcoal. It was interpreted as related to the collective grave either by "purifying" activities prior to the burial or by some kind of memorial practice. According to Dimitrov (2000), the evidence from grave 5 and the associated pit is accepted to be a result of some kind of outbreak of disease, in which the rapid disposal of the deceased and their "purification" was very important. However, this is an over-specific interpretation, since material reference to the distinction between purity and pollution can take many forms (Douglas 1984).

The oven is claimed to be used for the preparation of ritual meat. The dog presence was discussed in terms of the dog as mediator between the world of living and the world of the dead, the dog as a property and/or the dog as a close friend of the deceased; however, no final canine conclusion was presented (Dimitrov 2000).

6.13.2 The site and its surroundings according to GIS analysis

Given the present state of the data, the barrow location cannot be established. Two points were chosen to present the possible location. One of the points was 1.5 - 2km South West of the village of Malka Detelina and a full set of GIS analyses was performed for it. The reason for this choice is a) the distance and direction mentioned in the publication and b) on the topographic map used for digitalization, there is a sign of a feature on that particular place, which in other cases marks the presence of a barrow. The second point could be any of the four possible locations of Taniokoleva mogila; that is why no special analyses were conducted but the results presented above were taken into account. The purpose of this cross-referenced GIS analysis (which was done for Tcherniova and Taniokoleva barrows, as well) is to establish to what extent the location of the barrow may affect its a) landscape characteristics and b) site interrelation.

According to the first possible location, Kurdova mogila is on a 2 - 3^0 slope (CDFig.428) with a North Easterly aspect (CDFig.429) and at an altitude of 164 – 189 masl (CDFig.430).

The panorama from the site is good over the Eastern hills, as well as over the hilly ridges in the central part of the study area. Manchova (CDFig.431), Goliamata mogila, Malkata mogila, Taniokoleva 2 and 3 and the Polski Gradets tell are all visible from the barrow. The line of sight between Kurdova mogila and Polski Gradets site is more than 10 km in length and I would suggest that most probably the tell itself was not clearly visible. The important result here is that the area in which the tell was located (hence the tell) was visible from the barrow in general. The visibility from 2m higher, which was the actual height during the excavations, added very few new visible areas and only one extra site – MIBC1 (CDFig.432). Generally, the same visibility is yielded by an additional 3m height (if the barrow was destroyed), which means that, while the barrow was "growing", there was little improvement in landscape visibility and almost none in terms of site visibility (CDFig.433).

The cost distance analysis results (CDFig.434) are summarized in Table 6.13.2:

N of cost strip	Sites located in the cost strip
1	MIBC, Taniokoleva mogila – all locations, Manchova mogila
2	Tcherniova mogila – all locations, Goliama Detelina flat site, Iskritsa dwelling site
3	Iskritsa pit site, Goliamata, Malkata, Ovchartsi barrows, Atanasivanova mogila, Klisselika, Gudgova and Mednikarovo tells
4	Galabovo tell, Obrutchishte flat site, KMBC
5	Aldinova, Polski Gradets tell
6	Ovcharitsa I and II, Gonova barrow, Polski Gradets pit site

Table 6.13.2 Site distribution around Kurdova mogila

Table 6.13.2 shows that the sites with easiest access from Kurdova mogila were mainly barrows. The biggest concentration of sites is in the third cost strip that unites sites from both river valleys. This means that the barrow was located in an area with equal accessibility from the Southern and the Northern part of the study region. A similar pattern was observed in the case of Barrow 4 and Ovchartsi barrow, which puts these three barrows in a special spatial location as a) link between the two microregions and b) interrelating the three barrows as landscape mediators. It is important to point out that, from the seven barrows, which surround Kurdova mogila in the1st and 2nd cost strips, only one or two are actually visible from the site. There seems here to be a contrast between ready accessibility and poor site inter-visibility.

If the barrow was located close to the former village of Malka Detelina, its landscape and sites visibility should have been much more restricted, as demonstrated by the previous analysis. It also should not have this specific landscape role of a mediator. Therefore, the precise

location of Kurdova mogila was important for a) its landscape characteristics in terms of visibility and as a landmark, and b) its inter-site relation in terms again of visibility and site accessibility.

The logistical network repeats the track of the main North and South routes (CDFig.435). The only difference is the direction of the movement. There is one main path to the South of Kurdova mogila, which splits, 3 km after the barrow, into many individual paths leading to the sites in the Sokolitsa valley. Once the valley is reached, however, the tracks follow the main South route. There is a similar situation with the movement to the North. Most of the paths between Kurdova mogila and the other sites were discussed in previous case studies, with the exception of the paths to MIBC, Iskritsa and Taniokoleva mogila (for details, see Appendix A, p. 209).

6.13.3 Summary and discussion

Kurdova mogila contains evidence for rare or unique practices in the Balkan EBA. Prior to this excavation, no more than two individuals had been found in a common grave. The domed oven is the first one to be discovered in a barrow and there are only two more cases of combined dog and human burials known in Bulgaria (Dimitrov 2000).

At the same time, Kurdova mogila shows traces of burial practices more typical of Maritsa Iztok, such as the use of fire products (cf. the bonfires at Goliamata mogila, the hearths in MIBC), pit digging in the mound (e.g. Tcherniova mogila), crouched inhumation, and the creation of small burial mounds.

If the lack of information about red ochre is to be interpreted as the absence of this mineral, then it is very important to point out the total lack of red ochre. If this really was the case, it confirms the evidence from Tanoikoleva mogila and creates a pattern in which certain barrows are deliberately **not** furnished with red ochre – a deliberate rejection of a common EBA mortuary practice.

In summary, Kurdova mogila displays a combination of burial traits specific to Maritsa Iztok burial practices with traits which are rarely paralleled outside the region. This is found not only on the level of individual burials but also at the barrow level and probably relates to the negotiation of different forms of identity.

If a suggestion should be made for the possible location of the barrow, on the basis of the GIS results, I should accept the point at 1.5-2 km South of the former village of Malka Detelina as the most probable candidate.

6.14. Mednikarovo-Iskritsa barrow cemetery (MIBC)

6.14.1 General information and earlier studies

MIBC is located in the hilly area between the two valleys in the study region. It is discussed in Chapter 6, because the type and chronology of the site are more appropriately considered after a discussion of the sites in the Ovcharitsa valley.

The MIBC was excavated in 1992-93, when four out of the five known barrows have been investigated. The fifth barrow was completely destroyed by mining works (AFig. 6.14.1a). One more barrow located 2km to the East of MIBC2 (barrow 2) was considered to belong to the same cemetery but was not surveyed or excavated.

All the four barrows suffered from intensive cultivation, which most probably resulted in a reduction of their height. Additionally, the mounds have been damaged by road construction and looting activities (AFig.6.14.2). On the basis of ceramic grave goods, the cemetery was dated to the EBA2/3 period. For the initial grave in barrow 4, it was suggested that it may have been made at the end of the EBA1 period, on the basis of parallels with graves with silver beads in North Bulgaria. The cemetery was assigned to the Lower Danube variant of the Pit Grave culture. The site has two publications that are summarized here in the following section (Panayotov and Alexandrov 1995; Alexandrov 1994).

Archaeological evidence

At the time of the excavations, barrows 1 and 3 were 50cm in height, barrow 2 - 120cm and barrow - 480cm. The evidence from the graves and the features in the mounds is summarized in Tables 6.14.1 - 6.14.2.

N of barrow and N of grave	N of individuals	Stratigraphic position	Body position	Red ochre	Objects in the grave	Grave feature
Barrow1/grave1 (AFig. 6.14.1b)	1	In the sterile	Crouched on back	powder	No	Pit, 600 pebbles for mound/cairn
Barrow1/grave2 (AFig. 6.14.3 J-K)	2	In the mound and pebbles	Crouched on back and Crouched on left	Powder	A jug, three middle size broken stones	Pit
Barrow1/grave3	1	Secondary	Crouched on left	No	No	Pit, three rows of pebbles, soil mound
Barrow2/grave1 (AFig. 6.14.4a)	1	In the sterile	Crouched on back	Powder	No	Pit
Barrow2/grave2	1	Above grave 1		Powder	No	Pit
Barrow3/grave1(AFig. 6.14.5b)	1	Above grave 2	Crouched on back	No	No	Pit
Barrow3/grave2 (AFig. 6.14.3 A-H)	1	In the sterile	Crouched on back	powder	Two dishes, two jugs, an amphorae, silver pendant	Pit
Barrow4/grave1 (AFig. 6.14.4b)	1	In the sterile	Crouched on back	Powder	14 silver beads, two animal teeth (Afig.6.14.3 I)	Pit
Barrow4/grave2	1	In the sterile and in the mound	Crouched on back	no	no	Pit

Table 6.14.1. Burial evidence from MIBC

N of barrow/n of feature	Type of feature	Stratigraphic position	Related objects
Barrow 2/ feature 1	A hearth	In the mound	-
Barrow 2/feature 2	A hearth	In the mound	-
Barrow 3/feature 2 (AFig. 6.14.5a)	A pit	In the sterile and in the mound	On the base dish and jug at the short northwest side; small jug and piece of red ochre at the long northeast side

Table 6.14.2. Feature evidence from MIBC

6.14.2. The site and its surroundings according to GIS analysis

The data for the location of the barrows (CDFig.448), (CDFig.449), (CDFig.450) and their visibility is summarized in Tables 6.14.3 - 4. The different height figures correspond to a) the initial surface of the barrow; b) the actual height of the barrow, as discovered during the excavations; and c) the possible height in case of subsequent damage to the barrow.

Location	MIBC1	MIBC2	MIBC3	MIBC4
Aspect	West	South	Southwest	Southwest
Slope	1-2	1-2	1-2	1-2
Masl	164 – 179	179 – 194	164 – 179	164 - 179

Table 6.14.3 Landscape characteristics of each of the barrows of MIBC

Barrow number	Visibility from the surface	Visibility from the actual height	Visibility from 1m in addition
MIBC1	None (CDFig.451)	None (CDFig.452)	MIBC2 (CDFig.453)
MIBC2	MIBC3, both Iskritsa sites, Klisselika tell (CDFig.454)	MIBC1 and 3, both Iskritsa sites, Klisselika tell (CDFig.455)	MIBC1, 3 and 4, both Iskritsa sites, Klisselika tell (CDFig.456)
MIBC3	MIBC2 and 4 (CDFig.457)	MIBC2 and 4 (CDFig.458)	MIBC2 and 4 (CDFig.459)
MIBC4	MIBC2 and 3 (CDFig.460)	MIBC2 and 3 (CDFig.461)	MIBC2 and 3 (CDFig.462)

Table 6.14.4 Sites visibility from the each of the barrows of MIBC

Table 6.14.4 shows that, for barrows 3 and 4, there is a recurrent pattern of site visibility in all three stages of barrow development. MIBC3 is the only barrow in the cemetery with complete intervisibility with all other mounds. MIBC4 shares intervisibility with MIBC3 but becomes fully intervisible with barrow 2 only when the height of the latter is not reduced by later destruction.

Barrow 1 changes its visibility at the last stage of growth, at which point intervisibility appears with barrow 2. This means that the site was located in an area initially without any intervisibility with the other barrow places. Subsequently, when the barrow was already formed, intervisibility with barrow 2 was achieved.

The most complicated visibility pattern is observed for barrow 2, which has the best panorama among the barrows of this cemetery. Initially, the place where the barrow was created has visibility over three sites in the Sokolitsa valley and only one barrow in the cemetery. All the sites from the valley were earlier than the MIBC, which means that unidirectional visibility rather than true intervisibility was an issue. – with the later sites having visual contact with the earlier sites. And indeed there was not complete intervisibility between the sites in the valley and the MIBC2 – only between the dwelling part of the Iskritsa site and MIBC2. While the barrow was growing, one more barrow from the cemetery became visible (barrow 1) and, in the final stage of barrow formation (if we accept that there was a reduction of the height because of intensive cultivation), it has a panorama over all the three remaining barrows in the cemetery.

The cost distance analysis results (CDFig.463) are summarized in Table 6.14.5:-

N of cost strip	*Site located in the cost strip*
0	MIBC
1	Kurdova and Taniokoleva 2-4 barrows, Atanasivanova mogila, both Iskritsa sites, Klisselika and Gudgova tells
2	Obrutchishte flat site, Mednikarovo tell, KMBC, Manchova and Taniokoleva1 barrows
3	Galabovo tell, Tcherniova mogila – all locations, Goliama Detelina flat site, Barrow4, Goliamata and Malkata barrows
4	Ovchartsi barrow
5	Polski Gradets tell
6	Ovcharitsa I and II, Polski Gradets pit site, Aldinova
7	Gonova barrow

Table 6.14.5 Site distribution around MIBC1

There are minor differences in the cost distance and hence the site distributions conducted for the four barrows. The site distribution for MIBC1 is given in Table 6.14.5. In the cost surface analysis for MIBC2 (CDFig.464), the Gudgova tell falls in the 2nd cost strip, Obrutchishte flat site and Ovchartsi barrow in the third cost strip and Gonova mogila in the sixth cost strip. MIBC3 (CDFig.465) and MIBC4 (CDFig.466) share very similar cost surfaces, with one and the same site distribution. It differs from the cost distance of MIBC2 only in the location of the KMBC, which is now in the third cost strip.

As already mentioned (see above, p. 40-41), the delineation of the cost strips is flexible and it is meant to put the sites into a relative spatial relation. That means that the minor differences between the four barrows are not of crucial significance for the overall spatial relation of the MIBC to other sites. In the area of easiest access (1st and 2nd cost strips), there are sites of diverse type and chronology. Only three sites, all of which earlier than the cemetery, were visible from one of the barrows. Since the same barrow is the only one visible from all the remaining barrows, it is possible that the visual link between MIBC1, 3, 4 and MIBC2 “transmitted” the panorama over the Sokolitsa valley and the three sites.

In summary, the MIBC seems to present a locational pattern in which the different sites were visually integrated and settlements, pit-sites and barrows are evenly spread around the site. The cemetery location deviates from the previous pattern of barrow clustering far from any settlement and, together with the Goliama Detelina flat site, marks an important breakthrough in the spatial patterning of the Maritsa Iztok study region.

Most of the paths from the MIBC logistical network (CDFig.467), (CDFig.468), (CDFig.469), (CDFig.470) have already been discussed in Chapters 5 and 6. (for the few different tracks see Appendix A, p. 209).

The central position of the site imposed a different direction of movement but the two main routes are the same. A very interesting pattern of inter-barrow visibility was observed from the paths to and from the cemetery. This occurs whichever approach route to MIBC is taken, but with different combinations of visible barrows. The arrival at the cemetery of MIBC is perhaps a culmination of impressions of a number of individual barrows, with their embedded personal identities.

6.14.3 Summary and discussion

MIBC is the only documented case of a clustered mortuary monument in the Maritsa Iztok study region (the claimed cemetery close to the village of Malka Detelina is not supported by any documented evidence). The cemetery as a whole presents the pattern of specific and more general mortuary practices, just as in the other barrows in the area. Barrow 1 comprises stone mounds/cairns, as in Gonova mogila (see above, p. 119). Pottery, red ochre deposition and the use of fire/fire products are common feature in Maritsa Iztok burial places (see above, p. 129). The body position, grave features and the burial and memorial practices also match observed mortuary patterns elsewhere in Maritsa Iztok (see above, p. 133 -134).

What appears to be specific for MIBC is the overlapping of graves in barrows 2 and 3. I would assume that such a practice was deliberate rather than occasional, since pit-digging of later graves would have disturbed any earlier burials – something that could easily have been avoided by burial elsewhere on the barrow. Instead, it may be inferred that deliberate digging into an earlier grave meant the establishment of interrelations between the ancestor and the newly-dead. Further evidence for structured links between the dead and the living is the missing hands in grave 1 in barrow 2. As with other cases of missing bones (e.g., the skull in Aldinova mogila: see above, p. 128), it is possible that the body parts were disarticulated from the deceased during post-mortem activities for retention among the living.

More complicated memorial activities were conducted in grave 2 in barrow 3, where, together with the removal of the hand, a fire was lit that burnt part of the skull and the left arm, as well as the animal bone found in one of the dishes deposited in the South East part of the grave. This particular use of fire is unique to the EBA in the Maritsa Iztok region and provides a close link between ancestor worship (removal of body parts) and the use of fire, not to destroy but to provide a link to other practices involving burning.

Chapter Seven - The Drama microregion

7.1 Gerena flat site

7.1.1 General information and earlier studies

The Gerena flat site was investigated during three archeological seasons and a total of 300m^2 was excavated (Lichardus et al. 2001, Figs. 39, 40). The site is partially published and the evidence summarized in the next section is gathered from all the Drama publications and some of the unpublished investigation reports.
The numbers in the brackets are the field numbers of all the features excavated at each of the sites in the Drama microregion and are given here to facilitate references to the original publications.

Archaeological evidence

The earliest occupation at the Gerena flat site and in the Drama microregion as a whole were three pits containing Early Neolithic pottery. There were numerous traces of various cut features but only the three pits were accepted as the initial human occupation of the site. They were followed by some settlement activity, leaving the traces of at least seven dwellings. After their abandonment, there was a period in which the site was used for cultivation rather than for dwelling activity. This claim was based on the presence of a buried soil, indicating a so-called hiatus, between the second and the third occupational levels. The last Neolithic horizon was heavily destroyed by past and present agricultural activity and traces of only two houses were excavated. Two other dwellings were also found but their Neolithic chronology was not very secure. Part of the Neolithic occupational area was overlain by a barrow. The barrow was not apparent at the time of the excavation but was pointed out by the local villagers. On the basis of the scattered surface pottery, the barrow was dated to the Roman period (Lichardus et al. 2001). The evidence for occupation of the Gerena flat site is summarized in Table 7.1.1.

Although II/a and II/b are accepted as two different building phases, it was pointed out that such a division is not very certain. Generally, all the houses have beaten floors and a wattle and daub construction. There were single postholes but more often wall rubble with imprints of wattling were found. In the general section pf the report, all the houses were said to be burnt but, in the individual description of each dwelling, evidence for fire was not discussed.

The material found at Gerena is presented in total rather than by its finds context. All together, 187 bone tools, 880 flint artifacts and 40 polished stone tools were found at the site.

The numerous flakes found in horizon II were interpreted as evidence for on-site lithic production in a chipped stone workshop. The presence of 26 microlithics triggered a discussion over their function and origin. It was claimed that they do not belong to some kind of Mesolithic technology since they were found in a context dated a millennium after the first Neolithic settlers at the Balkans. Rather, their application as hunting tools predetermined their shape. Such a functionalist approach will be discussed in a next section (see p. 157). The claim for the prevalence of hunting in the subsistence economy was supported by the unpublished animal bone analysis, in which the percentage of domestic animals decreased to less than 50%. The pedological investigations also suggested a limited possibility for cultivation during the Neolithic in Drama (Lichardus et al. 2001:111).

The pottery consisted of 26,000 sherds and numerous ritual objects (number not specified). Among the sherds, there were 40 whole and 60 restorable vessels. Fifteen % of all the sherds were decorated; 23 % of the decorated sherds were rims and 14% body parts. The publication contains illustrations of many whole and restorable vessels, as well as whole and fragmented altars, figurines and other ritual vessels (Lichardus et al. 2001, Figs.41-43, and Tables 26, 27).

7.1.2 The site and its surroundings according to the GIS analysis

The site is located in the flood plain at 113 masl (CDFig.483). It is in a flat area (CDFig.484) with a Northern aspect (CDFig.485). The visibility from the site is mainly along the flood plain 1.2 km to the North West and 1.1 km to the South East (CDFig.486). Also visible are the low hills 1.4 km to the North East of the site, the first terraces of the steep hill 1 km to the South West of the site, as well as some of the gently sloping areas 1.4-2.8 km to the North West. The other two sites are visible from the Gerena location, which means that, if there were contemporary sites on Kajrjaka and Merdzumekja, there was a visual relation between the sites.

The cost distance analysis places Gerena in an area with immediate and easy access to tell Merdzumekja and a more constrained access to the Kajrjaka site (CDFig.487). The short distances, however, between the sites suggest that there was quick and fairly easy inter-accessibility.

The logistical network consists of two paths (CDFig.488). The path to Merdzumekja is 400m long and crosses the river Kalnitsa (CDFig.489). It possible that there was another route between the two sites, if the actual level of the river during the prehistory was very high at this particular point between the sites. The hydrological factor

Stratigraphic position	Type of feature	Content	Traces of burning
I horizon	Pit N589	Brown soil mixed with limestone and daub (wall rubble), numerous sherds and animal bones; the bottom was coated by a fine black layer, with a similar one 6cm higher	
I horizon	Pit N590 destroyed by later pit	Animal bones, sherds, daub and stones; successive dark gray-brown clay layers with layers with more limestone	
I horizon	Pit 606	Dark brown soil with few archaeological finds	
II/a horizon	Part of a house (570), Heavily destroyed by house 571	Oven (485), two fragmented vessels	
II/a horizon	Part of a house (579)	Oven 568, " no noteworthy finds" (Lichardus et al. 2000, p.106)	
II/a horizon	Part of a house (580)	Oven 569, destroyed by later pits	
II/a horizon	Part of a house (595)	Oven 567, compact wall rubble	
II/b horizon	Part of a house (565)	Oven 562, numerous sherds, some of the vessels are restorable, other vessels with parts still missing, a stone pestle	
II/b horizon	Part of a house (571)	Oven 566, many sherds	The soil in the house contains numerous charcoal pieces
II/b horizon	Part of a house (560)	Oven 561, large quantity of wall rubble	
III horizon	Part of a house (564)	Pottery, pestles, grinding stones	
III horizon	Part of a house (444)	Sherds, numerous flakes, antler and flint tools, whole vessels, animal bones scatters, a stone pestle	Burnt soil under the wall rubble, mixed with small pieces of burnt daub

Table 7.1.1 Archaeological evidence from the Gerena flat site

was not included in the GIS analysis due to lack of any relevant data. The visibility from the path coincides very much with the visibility from Merdzumekja (see below) and only a few more visible spots were added at the marginal areas (CDFig.490).

The second path to Kajrjaka is 1.3 km long and winds to the West (CDFig.491). The last segment ascends to the South East; following the gentler path up the hill until the site is reached. The visibility from the path consists of the two viewsheds from the sites together with a few visible spots added to the marginal areas (CDFig.492).

In summary, if during the Neolithic there were contemporary sites on the three places in consideration, then there was a strong visual connection between the sites and they were in an area with easy inter-site access.

Exploitation area

The exploitation areas of the sites in Drama microregion were not studied by the means of GIS, because it was not possible to find a pedological or geological map of the microregion with a scale that could be transferable to the GIS coverage maps. The existing soil maps (see p. 53) would produce a huge bias if overlaid on the precise 1:5,000 contour maps. Instead, my own observations made during the targeted field walking in summer 2001 are used here to reconstruct the possible exploitation areas for the sites in the Drama microregion.

The site is located at the confluence of the Kalnitsa river and a small local stream. The soil up to 500m radius from the site is dark grey alluvial clay with huge cracks and a few little stones. The next soil type distributed beyond the 500m limit is smolnitsa. On the margins of the study area, mainly over the hilly areas to the South West, South East and North North East, cinnomonic forest soil and some rendzinas were distributed.

Since the site is located on the right bank of the river, I would suggest that most probably the areas South and East of the site were cultivated during the Neolithic. The combination of the three major soils distributed there - meadow, smolnitsa and cinnomonic forest soil - facilitated mixed farming and crop rotation. The lack of exact data for the population number prevents any estimation of exploitation area. It is likely, however, that the arable land was sufficient to provide the necessary crops for a small hamlet or farmstead.

7.1.3 Summary and discussion

Given the present condition of the data, it may be inferred that human occupation in the Drama microregion started with structured deposition at Gerena, which continued during the following periods together with some settlement activity. Burnt houses are present at the site but whether the burning was deliberate or accidental is difficult to determine. Deliberate fragmentation, however, is a common social practice, as the ratios of the number of sherds: number of whole vessels: number of restorable vessels have shown. There is no feature continuity (e.g. house 571 destroys, rather than overlaying two previous houses); rather there is a pattern for digging into the rubble of the ancestors' site (e.g. in house 580).

The general summary of the subsistence strategy of the occupants of the Gerena site is consistent within the evidence and interpretative framework applied by its excavators. But there are, however, a few problematic points that should be taken into consideration. After careful cross-reference of all the publications, it becomes clear that the total occupational sequence was not taken into account in discussing subsistence but only the latest Neolithic layer of the flat site (the so-called Gerena C). The attempt to dispute the "Mesolithic" chronology of the microliths is generally correct but the successive implication that they were used for hunting (as they were allegedly used during the Mesolithic) is a functional determinism (Lichardus et al. 2001, Lichardus et al. 2000a), whose application in any subsistence interpretation could be very misleading. Microliths could be used for hunting or for threshing (Clarke 1975). The problematic layer C contains 42.2% cattle and 53.5% goat/sheep, which in comparison to the first occupational level (17.3% cattle, 76.9% goat/sheep) shows a clear tendency for an increase in cattle-raising, which may have been related to some form of arable cultivation (Beneke, n. d.). Last but not least, the results of the pedological investigation were disputed in general (see p. 49 -53), which together with my own observations make me suggest that the region around Gerena site contains fertile, arable land that may have been used for arable land during each of the Neolithic occupations. Comments on the subsistence patterns of the first two horizons were not made, so any comparison is not possible given the present state of the data.

In summary, I would agree with the Neolithic chronology of the microliths but dispute their necessary hunting function. I would suggest that the Neolithic community at Gerena practiced some kind of mixed subsistence economy in which hunting, gathering and farming were all staple sources.

The type of occupation and the reasons for (re)-settling and abandonment of the site were not discussed. It was pointed out that, after the second horizon, the site was used for cultivation rather than for living but it was not discussed where the people that were cultivating the area were living. The occupational sequence published so far (for Gerena and for the Drama microregion in general) consists of pottery phases rather than inter-related contextual evidence (e.g. houses, other features, archaeological material, osteological material, etc.) and does not allow any reconstruction of contemporary and/or successive sites (settlements, depositional places, etc)

7.2 Merdzumekja tell

7.2.1 General information and earlier studies

Tell Merdzumekja was the main focus of investigation during the long-lasting research project in Drama. The site was almost totally excavated, with documentation provided of occupations from the Neolithic up to the Early Iron Age. The relative chronology followed by the team does not correspond to the commonly-accepted chronology in Bulgarian prehistory (e.g. Karanovo V is termed "ECA" according to Bulgarian chronology, while in the German version it belongs to the Late Neolithic) but rather uses some individual chronological schemes (e.g. Katincharov's definition of MBA, which, according to almost all other Bulgarian BA investigators, is termed "EBA3": Katincharov 1981). Arguing against such confusing relative chronology is not one of the aims of the current study. The phases mentioned in the current statement follow the original chronology of the Drama team, despite my general disagreement with such relative dating. In some places, the commonly accepted chronology is put in brackets.

Several publications present some of the evidence and materials found on the tell but a detailed monograph on each of the occupational levels is still in preparation. The following section summarizes all the data available so far, incorporating material from some unpublished site reports.

Archaeological evidence

The earliest occupation on Merdzumekja tell dates from the period of Karanovo IV. The evidence from that occupation is very scattered and consists of part of a house (N685) with an oven (N686), a palisade ditch (687) and several pits (Lichardus et al. 2001, Table 25). The

ditch is 20m long, 40-55cm wide and 70 cm deep. The postholes are 25cm in diameter and 30 cm from each other. The ditch is filled with brown loamy clay, mixed with fine pieces of daub and numerous charcoal fragments. The pottery found in the ditch has very similar characteristics.

The following occupation was from the Late Neolithic period, or Karanovo V (ECA). An area of 14,000 m2 was excavated, which was generally destroyed by later houses, pits and shallow holes. At least 61 houses were found on the tell - all located within the area bounded by the ditch (N360). The ditch is generally dated to the succeeding Karanovo VI period but its earliest phases (although not found along the whole ditch) date to the Karanovo V period. Also contemporary to the houses were numerous pits, several palisades and some shallow holes (Lichardus et al. 2001, Figs.31).

On the basis of the overlapping of houses, several building phases were claimed for the Karanovo V period. The houses were rectangular to slightly trapezoidal in shape, with one room. Their size varies between 27 m^2 and 94m^2, and there is a similar variability in orientation. The bases of the houses were dug into the ground and successively this "foundation trench" was filled with earth a) to serve as insulation and, b) for the leveling of the floor. The earth was overlaid by a wooden floor, in turn covered by a beaten clay layer. The sequence is finished with reed rugs (Lichardus et al. 2001, Figs. 32-34). The postholes found on the tell together with some imprints of woven sticks suggest a wattle and daub construction. The inventory of the houses consisted of ovens, grinding stones – usually located close to the ovens - platforms, shallow holes and ash-pits. Outside the houses, there were numerous pits used mainly for storage or with an unknown function. Once the initial function was over, the pits were turned into "rubbish dumps" (Lichardus et al. 2001). Details of pit deposition were given for only two pits (Nos. 67 and 26/33), both of which were interpreted as sacrificial pits (Fol et al. 1989). The first one contained two shepherd's crooks made from antler. The second one had a compact pottery scatter, over which numerous deliberately fragmented tortoise shells were found.

Several palisades and small ditches were found within the Karanovo V settlement, which the investigators interpreted as features of unknown function.

Very little archaeological material, mainly sherds, was found in the houses in general. This was interpreted as a result of abandonment, after which only the unnecessary or useless things were left over. The artefacts found in the Karanovo V settlement are presented in general and mainly consist of fragments of pithoi, cooking vessels, table vessels, spoons, miniature vessels, vessel "imitations", pendants, beads, Spondylus bracelets, buttons and bone applications (Lichardus et al. 2001, Fig. 36 and Table 28). Also found on the tell are figurines, clay plaques, altars and other ritual objects (Lichardus et al. 2001, Tables 19-22). The figurines were divided into two types. The first type was specially made to facilitate deliberate fragmentation. In contrast, the second type was produced in a way, which prevents fairly easy fragmentation (Lichardus et al. 2001, Figs. 37, 38). Both figurine types were found fragmented, which made the investigators conclude that this was some common act of ritual breakage (Lichardus et al. 2001: 94).

A common find were also the perforated circular pieces of pottery, with rounded edges, usually called net weights (the excavators use descriptive characteristics rather than naming them) (Lichardus et al. 2001, Table 24).

Only one case of a foundation deposit was reported from the Karanovo V settlement. Under the floor of house 900, in pit N966 there were two dishes with river shells in each of them (Lichardus et al. 2001, Fig. 35)

The following occupation on the Merdzumekja tell dates to the ECA Karanovo VI period (for Bulgarian and British scholars, LCA). The settlement was totally excavated over an area of more than 10,000m2. At least 25 houses, shallow holes, storage pits and pits with other functions were found. The site was surrounded by a ditch up to 8 m in width (N360) and by a double palisade at the top of the North West slope (Lichardus et al. 2001, Fig.19). At the time of the publication, the link between the ditch and the palisade was not clear. All but two excavated features, however, were within the area bounded by the ditch and the palisade. The exceptions comprised two pits (Nos. 830, 825), interpreted as clay-pits, that lay outside the enclosed area. Traces of house reconstruction (e.g. N224), some overlapping features and dwellings, whose plans were not possible to reconstruct, made investigators infer more than one occupational phase. It was not specified, however, which set of features belonged to the earlier phase.

The construction of the houses was similar to the construction of Karanovo V houses. The only difference was in the rectangular shallow hole dug into the ground and called by the excavators a "cellar" (Lichardus et al. 2001, Figs.20, 21). The distance between the bottom of the cellar and the dwelling floor varied between 90cm and 1m. The function of these cellars was to isolate the damp and the cold during the winter and for cooling during the summer (Lichardus et al. 2001: 58). Most of the houses had a North West / South East orientation, rectangular shape and their area varied between 20.5m^2 - 104m^2. Some of the bigger houses had a shed attached to one of the short walls (one exception was in House 137, where the shed was attached to the long wall). All but one (N244) were one-storied houses, with an entrance on the one of the short walls and with no evidence for windows and the type of the roof construction. In most of the dwellings, there were domed ovens and related clay

shelves, which were interpreted as holding vessels. In house N380, there was a vessel dug into the clay shelf that contained some stones interpreted as pot-boilers. Also close to the ovens, there were usually big pithoi, strainers, ladles, grinding stones, scrapers and pestles. The vessels were most probably laid on shelves along the walls, since they were found in a row along the walls.

The main source for house furniture is House 244, which, together with the above described features, contained over 200 vessels (Lichardus et al. 2001, Table 4). Some of the vessels were whole and contained other vessels (Lichardus et al. 2001). During a visit to a National Museum of History exhibition about Drama (July 2002), I had the opportunity to see the pottery from house 244. It consisted of mainly whole, well-burnished, fine vessels of different shapes and sizes. According to the excavators, this house was the only one with two storeys; on the second floor, the fine, decorated pottery was kept, while, on the first floor, there were the cooking and storage vessels. There were ovens on both floors, and different types of stone tools were found mainly on the first floor.

Two main types of pit were recognized in the Karanovo VI period. The first type comprises shallow pits of irregular shape, located very close to the houses. The second type includes small, circular to oval pits with different depths, located at some distance from the houses, which were mainly used for storage. Traces of a "street" were also found, which took the form of a strip covered by small stones and sherds.

All the houses were burnt but the data is spread all over the reports, rather than in a single consistent paragraph detailing the end/abandonment of the houses and/or the settlement.

The later occupational phase of Karanovo VI consisted of a ritual platform and a series of structured deposition places covered by stones and a rectangular building (Lichardus et al. 2001, Fig.16.). The ritual feature (N37) is reconstructed by the excavators as a rectangular platform 3.4 x 4m in size, made from sand, clay and chaff, whose surface was several cms above the ground. On the right and left side of the platform, there were two shallow rectangular pits. Along the North side, a 2m-high wall was built. A raised path 2.2 m long and 0.75m wide was attached to the platform (Lichardus et al. 2001, Fig.17). The feature had traces of a massive fire but excavators had difficulties in deciding whether these were a result of fire during the building of the feature, during its existence or after its active use. It contained sherds, a spoon, a vessel with a round base, two miniature vessels, two clay wheel models, two fragments of clay plaques and a fragment of a zoomorphic figurine. The paucity of clear dwelling traces led to the conclusion that feature 37 should be related to ritual activity.

The building from the later horizon (N206) had two rooms with traces of a massive fire, a hearth, three whole vessels, 130 sherds that belonged to restorable but still not whole vessels, a figurine, a stylized zoomorphic figurine, a wheel model and two rectangular vessels (Lichardus et al. 2001, Fig.18). Bone tools, polished stone tools, grinding stones and many animal bones were also found in the building.

Close to the building, there were two places for structured deposition, each covered by stones, plus one more at some distance; all in all, there was a total of three large (Nos. 371, 241 and 253) and 23 small stone scatters. Generally, they follow a similar pattern of deposition – tools, ritual objects, bones and sherds, overlain by a stone scatter. In some cases, the bones were in anatomical order. Together with the deposition of figurines, fragments of altars, etc. in between the bones, this fact led the investigators to conclude that this resulted from deliberate rather than accidental deposition. Most of the scatters were dug into the earlier Karanovo VI layer (houses 244 and 380 in particular).

The ditch (N360) had at least six re-cuts (Lichardus et al. 2001, Fig.22). The excavations of the 25m wide zone between the ditch and the built settlement area revealed the presence of a bank whose base was fortified with stones. The pottery in the ditch was mainly from the Karanovo VI period, with less material from Karanovo V. The presence of almost whole Karanovo VI vessels and some flint blades was interpreted as an indication of deliberate back-filling of the ditch with house rubble following some kind of ritual activity, after the initial function of the ditch was completed.

The chronology of the six re-cut phases was not yet clear at the time of the publication and a preliminary suggestion was made that it is not impossible for the first three phases to have been filled with material from the Karanovo V settlement. The last (sixth) phase was accepted as belonging to a period post-dating the Karanovo VI occupation of the site. The entrance to the village was accepted as the so-called "earth bridge" between the North West and South East ends of the ditch (Lichardus et al. 2001, Fig. 23). In that area, a complex of several pits and palisades was excavated, which however, did not receive any interpretation. The data for the fill of the ditch is scattered throughout the site reports and could be summarized as different coloured clay patches, mixed with sherds, bones, charcoal and stones.

The palisade at the North West end of the tell consisted of a double row of postholes. The distance between the rows varies from 160cm to 180cm.

The two pits (825, 830) considered as sources for clay production were filled with "settlement rubbish" (Lichardus et al. 2001: 65), viz., sherds, charcoal, bones and daub, deposited soon after the final use of the pits.

Each house produced an average of 15,000 sherds, from which up to 200 vessels can be restored (Lichardus et al. 2001, Figs.24, 25). Apart from the vessels and the sets of vessels, there were also lids, ladles, spoons, funnels and strainers. The presence of earlier sherds in a later context received the unlikely interpretation of the storage of building material. Sherds and animal bones were found in the construction of the ovens, floors and walls and it was concluded that these were kept in the houses for future construction work. An alternative explanation concerns the inclusion of older, ancestral material in the materials used for building of new structures, to presence the ancestors (for an example from the Bronze Age of Mataci, in Dalmatia: Chapman et al. 1996).

Very few metal objects were found (Lichardus et al. 2001, Fig.26), which contradicts the numerous finds of slag, globules of metal, a tuyère and smelting pots. These remains of metal production are potentially very significant, since there are few, if any, examples of on-tell evidence for copper smelting. Bone and clay figurines, anthropomorphic vessels, zoomorphic figurines, clay models of wheels and boats, clay horns, stylized zoomorphic figurines, altars, clay plaques, models of ovens and cult buildings complete the variety of finds at the Karanovo VI settlement (Lichardus et al. 2001, Figs. 27-30, Tables 8-16). It was underlined that, despite a careful search, the missing parts of the figurines were not found. On a completely excavated site, this indicates transport of parts of figurines off site (for N E Bulgarian tells such as Ovcharovo, see Chapman 2000).

The 25 houses from the Karanovo VI period were suggested to have been distributed between a few clusters, each consisting of six to eight dwellings. The last settlement was abandoned after the houses were deliberately leveled. The well-preserved pottery in the houses made the investigators infer that the deposition of the vessels and the successive destruction of the houses was a deliberate act. They also suggested that the new settlement moved to the tell Kirchova vodenitsa at 4.5 km to the North West. In this final discussion on the Karanovo VI occupation, it was not specified whether the houses were destroyed by fire, despite the scattered reference to fire in the publication. Possible reasons for the deliberate act of abandonment were also not discussed.

The next occupation on Merdzumekja tell is from the EBA and represented by a paucity of evidence. Two almost whole vessels were found in pit 75 (Lichardus et. al. 2001, Fig.13). The other evidence, mainly sherds in secondary deposits (Lichardus et. al. 2001:41), was considered as post- Karanovo VI but not characteristic enough to be related to Ezero A (EBA1 according to Bulgarian chronology). Since on the neighbouring Gerena flat site, two vessels from the Cernavoda I period were found, it was concluded that the EBA in Drama is represented by the local post-Karanovo VI variant on the tell and Cernavoda I material at the Gerena flat site. The type of the occupation, the paucity of EBA evidence or the differences between the pottery on two adjacent sites, etc. were not discussed.

More secure EBA evidence derives from an area immediately South East of the tell. A settlement from the Cernavoda III period was excavated over an area of 300m^2. The cultural layer consisted of a scatter of wall rubble, sherds and numerous pits (Lichardus et al. 2001, Figs.14, 15). A burnt house of wattle and daub construction and a clay-coated wooden floor was found. Ten meters from the building, a pit with pottery, stones, melting pots, fragments of tuyère and metal globules was excavated. This evidence was interpreted as an indication of on-site metallurgy.

The most significant BA presence on the tell is marked by the MBA (EBA3) ditch, one building and a few pits (Lichardus et al. 2001, Figs.5-10). The ditch is located on the North West slope of the tell and encloses an area of 41.50/38.50 m with 10-12 % difference in slope (Gaydarska 2004 : Fig. 7.2.1). In the Southern part, there is a 3.60m long gap in the ditch, considered to be the entrance to the enclosed area. On the basis of the experiments conducted on the tell - a zone along the ditch was left open and, after eight years, it was visible on the surface as a shallow hole – it was inferred that the ditch operated as an open feature for a short time - not more then a generation. Apart from the material that was a result of wall erosion, deliberately deposited material was also recognized, especially fragmented pottery from the Karanovo V and VI periods, deriving from the houses that the ditch construction has destroyed (Fig. 7.2.1). The pottery, which dates the ditch, is from sherds scatters that have produced some restorable vessels (Lichardus et al. 2001, Fig. 11, Tables 1, 2). It is from the MBA (EBA3) and its deliberate deposition was confirmed by the fill of two of the vessels that contained wheat grains. Other vessels were thrown into the ditch, that caused their breakage. The fill of the ditch consisted of stones, wall rubble, loom weights, whorls and animal bones (Lichardus et al. 2001, Table 3).

As a general pattern, under the stones. whole or almost whole vessels were placed in single or large scatters. Above the stones and structured depositions, there was burnt rubble. There were no traces of fire on the wall of the ditch, which made investigators to conclude that hot daub was thrown into the ditch and that the actual fire took place in some building close to the ditch. The building was believed to serve some ritual activity. The only candidate for such a building is house N370 situated at 10-12m from the ditch. The reconstruction given by the excavator is that initially the ditch was dug to define the boundaries of an area, to which access was restricted to the South East. During that time, the feature should be regularly cleaned and maintained in order to prevent erosion or unwanted sedimentation. Later the ditch was

used for deliberate deposition after which environmental conditions contributed to the final in filling of the ditch.

There are two noteworthy facts from the evidence for the fill pf the ditch which were not discussed by the excavators. First, there were pieces of daub in different forms deposited in the ditch. During my exhibition visit, I observed arm- and leg-shaped daub pieces that derive from pre-MBA periods. Therefore, it is likely that the secondary use of daub was an important social practice in Drama microregion. Secondly, the wall construction of some of the rubble in the ditch contained stones of non-local origin (Fol et. al. 1989). Such a pattern may be interpreted as a deliberate incorporation of exotic objects into the social practice of structured deposition.

There was no clear settlement evidence from the MBA, since the only building (N370) was accepted as a ritual feature. It was a rectangular building with probable wattle and daub construction and an entrance from the North West (Lichardus at al. 2001, Fig. 12). There were 13 postholes in the inner space of the building, that were interpreted as a part of the roof construction. The pits excavated from this period were not discussed, only a brief description of storage pits was given – circular to oval in shape, with a broader basal than upper diameter, and often containing stones.

The latest prehistoric occupation on Merdzumekja dates to the LBA but is not discussed since the evidence was scattered and lacking in secure contexts.

The very selectively presented data from the tell contain a little evidence for features that destroyed other features, which is summarized in Table 7.2.1:

Type of feature	**Destroyed feature**
Ritual platform from Karanovo VI period	Earlier houses- 19 from Karanovo VI and 150 from Karanovo V
Stone scatters with structured deposition from Karanovo VI	Rubble of houses 244 and 380 from Karanovo VI period
MBA building N370	Ritual platform from Karanovo VI period
BA pit N300	House 206 from Karanovo VI
MBA,EIA and Roman pits	MBA ditch
MBA pit 249	MBA building 370

Table 7.2.1 Evidence for destruction of lower features by later features

7.2.2 Plant and animal remains

Karanovo V period

The only plant remains published so far from tell Merdzumekja consist of the collective find of the carbonized fruit of Cornus mas (Cornelian cherry). The sample was taken from house 3 and consisted of burnt rubble and several hundred fruits. It was not specified whether the fruits were only Cornelian cherries or whether there were some other species as well. It was inferred that the fruit was used for food either in a fresh or in a dry condition. The find was used to suggest that the shrub was distributed in the low woodland around the tell and was gathered by the ECA population (Kuster 1989).

The detailed osteological analysis is not published yet and only some very coarse-grained general information is published so far. The percentage of the domestic animals is greater than the percentage of the wild animals. Cattle and caprovines were probably equally represented, pigs were around 10%, and dogs were 2% from the total bone assemblage. The wild species consisted of wild boar, hare, fox, fallow deer, red deer, aurochs, wolf, wildcat and brown bear.

Karanovo VI period

Plant remains from the later occupation on the tell were very few despite careful flotation; the materials recovered contained evidence for cereals and some other species.

Animal bones were analyzed during an earlier stage of the investigations that have shown 93% of the bones derived from domestic species and only 7% from wild animals (Bökönyi 1989). Such a unique pattern was explained by either some specific subsistence practices at Drama or by the fact that the bones derived only from dwelling contexts and that bones discarded outside of the houses or in the pits were not taken into account. The later osteological analysis of over 30,000 bones (an average of 1,000-1,500 from a house) is not published yet, thus leaving this big discrepancy in the interpretation of the animal bone evidence. The domestic species are represented mainly by cattle (53%), followed by sheep/goat and pigs. Dog bones amount to no more than 2%. Some traces on the cattle horns were interpreted as evidence for yoking. The wild animals consist of wild boar, auroch, red deer, fallow deer, hare, fox, brown bear, wolf and wildcat.

7.2.3 The site and its surroundings according to GIS analysis

The site is located on low hill in the flood plain of Kalnitsa river at 119 masl (CDFig.483). It is in a flat area (CDFig.484) with a South West aspect (CDFig.485). The visibility from the tell is good over the flood plain 2.4 km to the North West, over the first terraces and the highest areas of the steep hill to the South West, as well as over the low hills 1.3 km to the North East of the site (CDFig.493). The panorama to the South East is limited by a small hill up to 182m high.

The visibility with an additional 3m, which is the maximum height of the tell, shows barely any improvement, and that only in the marginally visible areas (CDFig.494). The remaining two sites are visible from the tell in both viewsheds.

The cost surface analysis results are very similar to the Gerena case study (CDFig.495). The logistical network contains two paths, one of which already commented in the previous case study (CDFig.496). The un-discussed one is the path to Kajrjaka, which is 1.3 km long; 700 m South East of Merdzumekja tell, it joins the path from Gerena to Kajrjaka (CDFig.497). The visibility from the path combines the static viewsheds of the two destination sites and has a few more visible spots toward the edges of the visible areas (CDFig.498).

In summary, during the time of Merdzumekja occupation, the tell was in visual connection with the earlier Gerena site and with the contemporary (?) Kajrjaka site. The former was in immediate vicinity to the tell, the latter was with fairly quick access.

Exploitation area

The distribution of soil types around the Merdzumekja tell is the same as at the Gerena flat site. The actual exploitation area most probably was to the North of the river Kalnitsa, since the site is located on the left bank of the river. The terrain there is less constraining than in the areas South of the river Kalnitsa and has a good cover of arable land. The population of the Merdzumekja tell varied between 125 and 237 (for estimation pattern see Chapters five and six); for this population 131 to 249 ha arable land was needed, that was available to the North and East of the site and was sufficient to maintain a successful long-term agro-pastoral subsistence strategy.

Resources and catchment area

The bone tools found in the Karanovo V houses were awls, polishers, chisels and axes for woodworking (Lichardus et al. 2001, Table 23). The polished stone tools were chisels, axes, pestles and grinding stones – all made from local amphibolite, gabbro and diabase. Flint tools were also found but cores were a rare find.

The bone and horn tools from the Karanovo VI period were highly standardized and were used for the working of wet and dry wood, bark and leather/fur (Sidera 1996). Also for wood processing were used polished axes and chisels made from the same local rocks (Lichardus et al. 2001, Figs. 6, 7).

The flint technology of Karanovo VI period differs from the preceding period in the size of the blades, which are much bigger, as well as in the type of the raw material. According to Dr. Ts. Tsonev (pers. comm.), the chipped stone tools displayed in the Drama exhibition contains both local and Radingrad flint material. Unpublished report of the study of 1,200 flint artifacts from the tell concludes that débitage was made from local sources, while the majority of the tools were considered as imports (Ziesaire n.d.). Details of the studied chipped stone assemblage (n = 157) from the Karanovo VI period are provided in Gaydarska (2004 : 327).

Apart from the flints that derive from North East Bulgaria, there is very little published evidence for the catchment area of the settlements at Merdzumekja tell. Spondylus shell (from which the bracelets were made) was believed to derive from the Aegean (but a Black Sea source is also possible). Whether the bracelets were coming as a ready pendant or in the form of raw material is not clear. It is, however, a strong evidence for links with the Mediterranean or Black Sea region. The river shells found as foundation deposit suggest some fishing and gathering activity that may have been in the 5 km agricultural limits. The same is valid for the hunting, which has been practiced by the Merdzumekja population as the presence of the wild animals has shown. The dominant wild species was the wild boar, which may relate to the fact that there were figurines made from wild boar bones. Whether hunting activities were taking place in the adjacent upland areas is difficult to say due to the lack of pollen data, hence evidence for deforestation.

Some non-local rocks have also been brought to the site but the distance from which they derive is difficult to establish. It is important, however, that, despite the presence of rocks around Merdzumekja, some other types of rock were produced or exchanged, and these were considered as an important component of the structured deposition on the site.

7.2.4 Summary and discussion

The long occupational sequence in Merdzumekja shows a pattern of recurrent social practices.

Structured deposition was most probably the commonest as it appears in various forms in each settlement layer. Deliberate fragmentation is the other widely performed activity that is related to both ritual (figurine breakage, deposition of fragmented vessels, etc.) and quotidian (e.g. construction of ovens, floors, etc.) practices.

Various objects were used for deposition that derive from the every-day repertoire. There were, however, some particularities (e.g. burnt rubble, daub features, non-local stones) that imply highly structured practice of interweaving the everyday with the exotic, the ritual with the quotidian.

There was no feature precisely overlaying another earlier structure in terms of deliberate continuity of layout (Bailey 1990, 1996), rather, there was a repeating pattern of cutting into ancestral deposits. It is important to point out that the MBA ditch cuts only three earlier houses in an otherwise densely occupied area (Gaydarska 2004 : Fig. 7.2.1).

The only strong evidence for accumulation is house 244. There were other fully excavated houses but only this contained such a quantity of material. Taking into account that house 244 was the only two-storied dwelling, I should suggest that the inhabitants of the house have gained some prestige, displayed, and thus authorized, by the large quantity and variety of objects.

Nonetheless, the deliberate abandonment and burning of the houses was not explicitly related, although it may be assumed that this was one of the crucial activities on the Merdzumekja tell, whose major goal was successful social reproduction.

And finally, there is a very clear pattern of structuring the area of the previous settlement. Various types of structured deposits (e.g. pits, platforms, etc.) reveal a complex practice of conceptualizing the space that has specific meaning for the participants and witnesses of such activity. There is evidence for deliberate deposition in pits and ditches in the very first occupational level, as well as throughout the whole occupational sequence during which course the depositional practices diversify (e.g. platforms and stone scatters). Therefore, there is not only a synchronic discourse (exchange of massages) through the way of deposition but also a diachronic discourse and/or continuity of depositional messages. At present state of the data it is difficult to reconstruct the actual sequence and possible meaning of the specific deposition but I should infer that structured deposition within each occupational level, as well as through time was a major means of organizing communication in the social life of the tell Merdzumekja.

7.3. Kajrjaka flat site

7.3.1 General information and earlier studies

The Kajrjaka site was investigated during five archaeological seasons, during which a cultural layer consisting of pottery from Karanovo III, IV, V and VI periods, EBA Ezero A and B periods, MBA, pits and pottery from the EIA and a Roman cemetery was excavated. The major site on Kajrjaka hill was the Roman cemetery and, since the earlier occupation levels were heavily destroyed, the prehistoric evidence was not discussed. The very scanty published data is summarized in the following section.

Archaeological evidence

The Neolithic, Eneolithic and EBA layers on the Kajrjaka site were mentioned as present, a table with EBA sherds was published and further comments on this early evidence were not made at all. More attention was paid to a clay reel found in a secondary context, which had some incised signs interpreted as a Linear A inscription (Lichardus et. al. 2001, Fig. 57). It was pierced, and hence taken to be worn on a necklace (Fol and Schmitt 2000). The probability that the inscriptions were Linear A rather than just incised decoration was discussed in the context of similar finds discovered outside the island of Crete. Different objects (e.g. clay balls, body sherds, etc.) with Linear A inscriptions have been found on some Aegean islands, in the Peloponnese and on the coast of Asia Minor coast; the closest such find to the Drama microregion comes from Samothrace. The relatively coarse execution of the reel made investigators suppose that this was a barbarian imitation of an imported object. Since the reel was found in a secondary context, it was difficult to date it. The suggested chronology was in a period after the LH IIIB/C phase, when Linear A was still in use in unofficial texts (Fol and Schmitt 2000). Many important questions were triggered by this find, such as: – were there any documented trade contacts between the Aegean and the Upper Thrace, were the objects with Linear A inscriptions objects of exotic exchange and why was an imitation of linear text needed? However, these were not explored any further. The important information that this find has revealed is to confirm that prehistoric societies were not in isolation but were participants in regular networks – in particular, the Aegean and Upper Thrace.

Another evidence for the same general direction of contact is the presence of Mycenaean and some Protogeometric sherds. They were related to features from the EIA, which means that either there was an exchange of earlier pottery during the IA, or most probably that the sherds were re-deposited by the EIA population. In both cases, however, there was a trade/exchange of fragments and the deliberate storage of ancestral objects. Nine of the sherds were given for neutron activation analysis (NNA) to trace the possible pottery workshop. There were no conclusive results but four of the sherds were thought to derive from Asia Minor (one almost sure, the other three less), three were possibly related to a Macedonian pottery workshop and the last two shared no similarities with the Aegean world. Despite the relative uncertainty of the data, the long-distance contacts between Drama microregion and the Mediterranean were most probably an important part of

socio-economic life in the later prehistory of South East Europe.

Another direction of possible contacts was suggested on the basis of evidence from grave N27. The grave pit was destroyed by the building of one of the EIA features and contained a child crouched on the left side and a cup identified as deriving from the Tei - Monteoru culture to the North of the Danube (Lichardus et. al. 2001, Fig.58). The skull was missing and the anthropological analysis did no show any traces of ritual treatment. Two fragments of a coarse vessel were found near the head and another one in the knee area. Close to the area where the head should have been lay one red deer bone, one cattle bone, one cattle tooth and two caprine bones. The investigators discussed in great detail the chronology and parallels of the cup rather than trying to explain why and how the cup was finally displayed in a grave with some obvious peculiarities. Given the present condition of the data (e.g. it is not clear whether the head went missing after the building of the EIA feature, etc.) I would suggest that the buried child had a specific social status that was underlined through the deposition of prestige grave goods – an exotic pot. The significance of the dead person was reinforced by the fact of the missing skull, if we accept that it was taken to be kept among the living. The lack of "ritual treatment" could be interpreted that the skull was removed when the flesh has already decayed, hence there were no traces of violent decapitation. The hypothesis that the burial was not a single act but rather a continuous process is indirectly supported by the presence of at least three different animal species in the grave, probably deliberately killed and ritually consumed in a feast during the long decaying process and some of the bones were finally deposited in the grave. It should be recalled that another child burial – this time from the Karaivanovi mogili barrow cemetery – was also furnished with a Tei-style cup (see above, p. 177 - 179).

Last but not least is the LBA evidence consisting of scattered finds generally related to the Nouă-Sabatinovka-Coslogeni culture. Only one concrete piece of evidence from the Kajrjaka site was presented – a fragment of a so-called sceptre, deposited in a stone cairn (N97). The sceptres are stone bowl-like objects with both practical and symbolic value generally related to the Nouă-Sabatinovka-Coslogeni culture (Lichardus at al. 2001:170). Four more similar artefacts were found in the adjacent areas that, together with some plastic decoration (considered as characteristic for Nouă-Sabatinovka-Coslogeni culture) on both hand- and wheel-made pottery, has suggested the influence of this LBA culture over the population in South East Bulgaria. According to the excavator, it was a result of migration, followed by selective acceptance by the locals (Lichardus et. al. 2001: 169).

Given the present condition of the published data, such an intensive movement of people (Nouă-Sabatinovka-Coslogeni culture) and objects (Mycenaean pottery, Tei – Monteoru pottery) toward the Drama microregion is far from being argumentatively proved and explained. The evidence given to support the North Pontic presence in Bulgaria is selectively chosen (cf. Gaydarska 1998) and few specific parallels have been found amongst Aegean and Anatolian artefacts.

7.3.2 The site and its surrounding according to GIS

The site is located on a high terrace, at 148.8 masl (CDFig.483), in the immediate South East vicinity of the present village of Drama. It is a site with a horizontal stratigraphy, which makes it problematic to make a GIS study based on a point definition. However, it is located generally in an area with a 2^o to 5^o slope (CDFig.484) with an East North Easterly aspect (CDFig.485). The visibility from the site is very much dependent on the actual point from which the viewshed analysis is performed. The best visibility is achieved while looking from the edge of the terrace, which is one of the possible extremities of the site. Going up the hill to the South West significantly diminishes the visibility, restricting it only to the areas North of the viewing point. The panorama from the edge of the terrace is good over the Kalnitsa valley and the sloping foothills that surround the flood plain to the North and South East (CDFig.499). There is some strip-like visibility to the South West of the site towards the higher parts of the steep hill on which the site is located. The change in the visibility status from different viewing points was confirmed during my visit to the site in summer 2001.

The cost surface analysis puts both Gerena and Merdzumekja sites in the first cost strip (CDFig.500), thus locating them in an area with equal access from the site. The logistical network again consists of two paths already commented in the previous case studies (CDFig.501).

In summary, the earlier and contemporary sites were located in one and the same relative distance from Kajrjaka. They were visible from the edge of the terrace but not from other parts of the site. Most probably, then, intersite visibility is a secondary factor in the location of the Kajrjaka site.

Exploitation area

So far, there is no secure evidence for settlement activity on the Kajrjaka site. However, if there was some kind of occupation, which requires agricultural activity, it should have been very similar to the one discussed for the Gerena flat site. The site is located on a steep hill and, unless some as yet undetected terracing has taken place, it is not suitable for intensive agriculture. There are, however, flat and gently sloping arable areas to the North and East of the site, all situated on the right side of the river Kalnitsa, and these would appear to be the most

likely candidates for the exploitation area of the Kajrjaka site.

The resources, land use and catchment area of the Kajrjaka site cannot be discussed because of the paucity of available archaeological evidence.

7.3.3 Summary and discussion

The evidence from the Kajrjaka site points to two possible types of site development. First, the inconsistency of the data in respect of the existence of an occupation layer is maybe due either to erosion process or to later occupations of the site, in which the IA structures and the Roman cemetery have destroyed the earlier layer. Secondly, the lack of clearly interrelated settlement, burial or depositional activities may correspond to some kind of highly formalized structured deposition, from which only scattered evidence is now available due to the later destruction. The hypothesis for the existence of a place whose primary function is structured deposition does not contradict the general evidence from the Drama microregion, in which structured deposition is widely practiced. In such a case, the Kajrjaka site presents evidence for long-lasting depositional continuity, with closely related cultural memory providing another aspect of continuity from the Neolithic up to the LBA.

Chapter Eight - Landscape, Material Culture and Society in the Sokolitsa, Ovcharitsa and Drama microregions – a comparison and synthesis

8.1 Material Culture and Society

In the previous three chapters, I attempted to present the variety of prehistoric archaeological evidence from three small valleys in South East Bulgaria. It is obvious that there are striking similarities, as well as revealing differences. In the following pages, I shall define and attempt to explain the repetitive and diverse patterns of human occupation in the three study microregions.

8.1.1 The similarities

Both the similarities and the differences in the evidence from the study area are going to be discussed according to a similar pair of characteristics – social practices and contacts.

Social practices

Fragmentation

Probably the commonest characteristic of the sites is the abundance of fragmented objects. They are made from all types of material (e.g. stone, bone, clay, etc.), have different primary functions and are found in a variety of contexts (e.g. in pits, on dwelling floors and in cultural layers). Only in the Drama microregion has the abundance of sherds and missing parts of figurines received interpretative attention, being considered as the result of deliberate practice (see p. 160). An outstanding illustration of the nature of the deliberate fragmentation practice is the several examples of earlier sherds found in a secure later context. Broken objects were laden with specific meaning and then used as communication means in particular social negotiation. One of the best examples for a structured message mediated through fragmented objects is the joint deposition of a base and a lower part of a pithos and a rim and walls from another pithos in a pit in the LCA layers of Galabovo tell (see p. 82).

Another striking example derives from Gudgova tell, where apart from the whole and restorable vessels, fragments from at least 200 vessels with different shape and decoration were found in the LCA layers during the first excavation of the tell. These revealing cases, together with the numerous fragmented objects kept in settlements, as well as the claim of the Drama investigators for missing parts of the figurines, should suggest that the fragmentation and the successive employment of fragments in various social interactions was a deliberate social practice in the study area.

Most often, the fragmented objects were found in a context that reinforced their specific meaning – the context of structured deposition.

Structured deposition

The second commonest practice in all the three study regions is structured deposition. It was documented in different forms throughout the whole occupation sequence, from the Neolithic up to the LBA. Most often, structured deposition was made in pits both in settlement areas and within formal depositional areas. There are cases in which pit deposition precedes the settlement activity (e.g. Gerena flat site); there are cases in which pits are contemporary to the habitation of the sites (e.g. Galabovo tell); and finally, there are cases in which pit digging is the final human activity on the site (e.g. Mednikarovo tell). Despite the differences in the concrete patterns of deposition as well as, perhaps, the differences in the concrete reasons for the deposition, every structured deposition in pits shares one and the same general aim – exchange with an antecedent reality. In the case of pits as initial occupation, it is the virgin soil, while in the case of pits cut into the cultural layer it is the ancestral deposits, which are exchanged with contemporary objects in order to create a specific "relationship" between the past and the present. The meaning of structured deposition in pits is reinforced in the formal areas for deposition. It is possible that different primary aims of the act of deposition, such as legitimising newcomers' presence, memorising an important event or devoting fertility gifts, may have deliberately taken place in different places. Given the present state of the data, there is rarely conclusive evidence for such a spatial division.

Very little contextual information is available for specific patterns of pit deposition. In Pit 17 from Polski Gradets pit site, there was a clear North / South division of finds. At the Iskritsa site, one pit (N4) contained only sherds from fine vessels in contrast to the fill in the other pits that contained mixed coarse and fine ware. The importance of the recovery of detailed contextual evidence for all excavation contexts cannot be over-emphasised; with this additional information, a clearer sense of the structural principles guiding pit deposition would be more readily defined (cf. Chapman 2000c).

The other type of structured deposition was deposition in ditches. Such an activity was most probably a common community performance, as it involved joint efforts in the cutting, maintenance and re-filling of the ditch. Therefore, structured deposition in ditches may have been associated with a sequence of target-oriented practices (e.g. burning houses and then deposing the burnt rubble), in which more or less the whole community was taking part, either as a participant or as a witness. From the two cases of structured deposition in ditches in the study area, one was interpreted as deliberate ritual activity (ditches in

Drama) and the other was claimed as a settlement activity (Ovcharitsa II). As discussed in section 6.3.3, there are many arguments why such an interpretation for Ovcharitsa II is not convincing. Instead, it is highly probable that the site is a depositional area with a high level of structured discard which continued over a lengthy period of time, perhaps several decades.

Other types of structured deposition, such as burial practices and the deliberate burning of houses, will be discussed in later sections. At this point, the last types to be mentioned are pottery scatters, foundation deposits and the de facto deposition of exotic materials inside containers or in contexts. Examples include the placing of a bead in a vessel arguably imported from the Levant in Galabovo and the placing of non-local stone artifacts in the ditch at Drama- Merdzumekja.

The diversity of archaeological evidence from the study sites has confirmed that structured deposition in various forms and probably meanings was an important social practice from the Neolithic up to end of the LBA.

Burnt houses

The deliberate burning of a house/building for the purposes of celebrating the death of the structure, which in turn enabled the subsequent deposition of its rubble, has been claimed only for the Drama MBA ditch (Lichardus et al. 2001). The abandonment, levelling and burning of the "full" houses in Drama Merdzumekja, in the Karanovo VI period, was also a deliberate act that was not connected to some hostile invasion. The majority of the investigated sites contains evidence for both controlled fire and for secondary deposition of burnt rubble. Apart from Drama, the most prominent example of deliberate burning is the Iskritsa pit site, where, after a millennium of recurrent structured deposition, the final-phase building was burnt to mark the end of this life cycle of the site. This event coincides, in a broad sense, with the burning of the features in the LCA layers of the Galabovo and Gudgova tells and the above-mentioned abandonment of Merdzumekja tell and probably underpins a crucial moment in the social development in the later prehistory of the study area. The practice of burning features was prevented by the mud-volcano eruption which covered the Iskritsa site but it was continued on the re-occupied tells. It is likely that burnt rubble was distributed from the places of fire on the tells to other places where it was deposited. Such a claim is based on the data from the Mednikarovo tell and the Polski Gradets pit site, both of which contain BA secondary deposits of burnt rubble but lack conclusive evidence for massive on-site fires. The data for the Neolithic practice of deliberate burning is sparse but the evidence from the Mednikarovo tell and the Gerena flat site suggest that it is possible that the concept of killing houses with fire and the subsesequent re-ordering of settlement space may have been developed during the Neolithic period in the study area.

It is beyond question that our modern rationality does not allow us to comprehend in full the particularities of archaeological evidence we find and often archaeologists substitute modern for ancient worldviews (Brück 1999). However, this should not stop the attempt at reconstruction of the social development of the communities we study by inter-relating the variety of available evidence and integrating them into a coherent interpretative framework. For the current study, such an interpretative framework is provided by the concept of the Arena of Social Power which may give an answer to the questions – why, when and what type of social practices were employed by the small communities of the study area.

Structured deposition is connected to both practices - fragmentation and burning houses - since sherds and burnt rubble are found very often in structured deposition context. However, broken objects are also to be found in not necessarily formalized deposits, indicating that fragmentation as a practice has an importance of its own (e.g. a fragment of stone axe may have been kept as a sign of personal enchainment in a house rather than in structured context). The same unconstrained link is valid for structured deposition and burnt houses. The deliberate burning of houses is a form of structured deposition in its own right, based as it is on a performance choreographed in accordance with specific aims. Therefore structured deposition, fragmentation and the burning of houses were independent but closely integrated practices. Most probably fragmentation, structured deposition and the burning of houses on their own and their dynamic link were daily, annual or once-in-a-lifetime practices in the study area. They served routine quotidian purposes but in the same time they were powerful means for the negotiation of social continuity and social change.

The best example for such a temporally and spatially integrated system of social practices is the Merdzumekja tell. This almost fully excavated site provides secure evidence for deliberate formalization of the area where preceding settlement had taken place. There is no evidence for violence or environmental disaster, which means that the abandonment of the settlements was voluntary, and hence most probably related to some social issues. Social practices were not a characteristic only for "new" settlements; they were also part of the everyday life (e.g. the maintenance of the ditch) or ritual activity (e.g. once the clay pits were exhausted, they were re-filled as an act of homage to the ancestors) of the Merdzumekja occupants.

Given the present state of the data in the Maritsa Iztok study area, such a consistent and repeated proof of successive social practices is missing. There are, however, a few cases of matching patterns that may

throw some light on the overall social life in the Sokolitsa and Ovcharitsa study regions.

It was pointed out that all more or less securely dated LCA occupational levels ended their life-cycle with fire. The next occupation in the region developed in the EBA1 phase at the enclosure of Ovcharitsa II, together with the first barrows. The burial mounds will be discussed in section 8.1.2 and here only a few comments are made on the role of the Ovcharitsa II site in the settlement development of the microregions.

On several occasions, I have disputed the current interpretation of the site as a settlement and argued that Ovcharitsa II is an enclosed space primarily for a sequence of structured deposition events. It followed a period of break in human occupation, which I would argue was not longer than a generation. An important support for the revised interpretation of Ovcharitsa II is the abandonment and burning of the LCA occupations. Chapman (1993) has argued that settlements constituted domestic arenas, whose abandonment should point to an unresolved social tension within current means of social negotiation. The reasons for such tension may have been the intensification of the process of social differentiation consequent upon moving back into a once-occupied area. This would entail reconciliation, as well as formal denial of the "old order", and hence a new type of formal occupation activity. The imitation of houses and settlement activity in Ovcharitsa II, together with the features of structured deposition (the ditch, the "chain-dwellings") and the enclosed space itself, employ an array of highly structured contexts, which act to reinforce a particular aim - the legitimization of the "return" to the region.

The same aim of legitimization is pursued in the numerous examples of exchanges of identity with the ancestors, achieved mainly made by cutting into earlier cultural deposits. Such a practice may have followed a cyclic pattern (e.g. annually) but it also may have taken place at times of increased social tension. A good example of such a critical moment in the social development of a tell was found in square O7 in the 11th BA horizon at the Galabovo tell, where three pits and an infant burial were found in part of a destroyed house. In this case the link between the ancestors and the living is reinforced by the presence of the dead, at a time when the death of the house coincides with the death of an infant and many artefacts.

The cases in which the links between ancestors, the newly-dead and the living are crucial are connected either with possible newcomers or successful households disputing over communal paramountcy. Perhaps, it is not a coincidence that life on the tell has ceased after two (or three) more settlement occupations. The presence of Anatolian imports (AFig.5.1.10c) provides one possible reason for such social tension. Imported objects were brought on the tell either by locals, who thereby gained in status, or by newcomers, whose social distance was a threat to the community. Long-distance specialists/traders who have gained not so much wealth but rather power, specific knowledge and skills may have disputed the paramountcy of the local leader or vice versa – the local leader may have disputed the traders' abilities and power. The Anatolian interaction was claimed to begin in the tenth BA horizon, and hence may well have triggered social interaction visible in the intensification in structured deposition (Table 5.1.6).

The sites from the three microregions provide evidence for similar social practices through time and space and suggest a long-lasting, dynamic process of social transformation.

The contacts

There are at least four groups of objects defined as such in accordance of their way of coming onto the sites.
The first group contains objects that have come to the sites as a result of hunting, gathering, mining and raw material production. During all of these activities, people have been in constant contact with other people, either in the form of support and co-operative labour or in the form of competition and rivalry. Such interactions have motivated different types of social behaviour (e.g. the trophy display at Gudgova tell) and constitute the basic form of contact - everyday contact.

The second group of objects contains features and things that could be considered as local but which were commonly found over areas much larger than the study area. This is the suite of similar pottery, tools assemblages, ritual objects, etc., in other words, the elements of an "archaeological culture". These similarities in material culture represent, in the terms of the present study, a dynamic social network, in which biological reproduction was dependent on exogamous marriages and for whose successful social reproduction a coherent communication code was vital. The similarity of basic tools shows a shared knowledge of resources, production technologies and skills. It also betokens exchange and transmission of innovations and traditions in time and space, which are only possible in a society with mutual interests in self-sustaining development and successful reproduction. The establishment and (re-) negotiation of social order was made through the total variety of material culture and the contacts between sites within the breeding network were crucial for maintaining the uniformity of this communication means. Resistance to traditions and accepted aspects of the habitus is expressed through major changes in material culture.

The next group of objects, which is the group of similar widespread objects of non-local origin distributed among most of the sites, consists of two main types of artefacts – Spondylus ornaments and lithic tools – both of which

were found in a quantity and frequency suggesting regular trading activity. More conclusive evidence is available for the flint tools made from the so-called honey-coloured flint, originating from areas in North East Bulgaria beyond the Stara Planina Mountains (Fig.1.1.1). The latter is not very high but rather wide, covering 50 – 60 km from the start of the Southern foothills to the end of the Northern foothills. The South – North crossing is possible mainly in the summer but cannot easily be crossed even with the current developed network of routes. Long-lasting and recurrent contacts across the mountains between people near the flint sources in North Bulgaria and the Bronze Age communities of the Thracian plain are documented by the discovery of finished tools from north Bulgarian sources at other settlements, such as Ezero (Georgiev et al. 1979). Whether the extraction of raw material, the production of tools and their subsequent distribution was a co-ordinated process is difficult to infer from the present state of investigation. It is also not possible to ascertain whether finished or semi-prepared products were distributed. What is obvious, however, is that flint extraction and production was not a daily activity and, if it was practiced by individuals from each Bronze Age site in the Thracian plain, all of them should have had a specific logistic knowledge as well as specific flint production knowledge. I would suggest that the movement was in the opposite direction and long-distance specialists from areas North of Stara Planina were trading or exchanging finished tools and/or blanks in the Thracian plain.

The same general pattern of distribution is probably valid for the Spondylus ornaments as well. Whether they were from the Black Sea (Todorova 1995, 2002) or from the Mediterranean Sea (Séfériades 1995) and whether they were transported as shells or ready ornaments is still not certain. There is some evidence for possible Spondylus working at one of the tells in North East Bulgaria but the results of the excavations are not published and proper analyses have not yet been completed[1]. However, the Spondylus shell is not a local resource in the study area and was probably traded by long-distance specialists.

In the present state of research priorities and the types of evidence available in Bulgaria and in the study area, it is difficult to suggest whether there was a widespread exchange equivalent (e.g. type of "currency"). It is also hard to define what was traded in return for the flints and Spondylus.

Finally, there were either exotic objects or single objects of distant origin. This group of objects includes the obsidian blade in Grave 1 in Gonova mogila, the glaucophane axe from Gudgova tell, the small cup in the child burial in Kajrjaka and several other items. These special objects represent the essence of the link between people and object, people and people and people and places. If these exotic objects were personal belongings that came into the study region with their owner, they most probably were kept as a symbol of the people and places from which the newcomer arrived. This specific message of an object evoking images of people and places is reinforced in the case of possible exchange. In such a case, in addition to the personal biography of the object – having a specific value of its own - another important link is made through the personal enchainment between the person/s who brought the object and the person/s who accepted the object.

These four types of contacts - local, regional, middle-distance and long-distance reveal complex and dynamic links between people, places and objects. The similarity of practices and the trends in contacts a) across the study region, and b) within the single site sequence marks strong evidence for long-lasting and intensive local networks, regularly complemented by the extension of these social networks into long-distance exchange and procurement.

8.1.2 The differences

Social practices

There are two main differences between the Drama microregion on the one hand and the Sokolitsa and Ovcharitsa microregions from the other. The first difference is the very week pattern of accumulation in the Maritsa Iztok study area. By contrast, on the Merdzumekja tell in Drama, house 244 from the Karanovo VI period, with its more than 200 vessels, 40 flint tools and other special finds is a typical example of accumulation. The second important difference is the lack of barrows and any other burial evidence in Drama microregion (except for the MBA grave at Kajrjaka), in contrast to the abundance of mounds in the other two study regions. These differences are due to specific responses that communities in the study microregions have offered to potentially unsettling increases in social differentiation.

The appearance of the barrows should be envisaged in the context of social tensions at the end of the LCA, that have led to the abandonment of the settlements in the study area and to the emergence of entirely new forms of arenas of social power.

The barrows are generally dated to the BA and as the analyses have shown there are some differences in the deposition patterns between the EBA and LBA. The biggest difference is that, in the LBA, the practice of founding new barrows was not very popular (only one new barrow was created during this period) and, instead, the old barrows were re-used alongside the emergence of flat cemeteries. However, it should be pointed out that there is clear spatial continuity that includes LBA re-use

[1] The *Spondylus* – ornaments and debris – and the working tools are in display at Omurtag Historical Museum.

of not only barrows but also flat cemeteries located in places with EBA structured deposition. The other difference is that grave good deposition was more common for the LBA burials than for the EBA burials. And finally, red ochre deposition is rare during the LBA in contrast to the EBA, when its deposition is common. These differences could be explained by the development of a common understanding of the display of the mortuary set, that differs from the specific meaning of the burial deposition in the preceding EBA. Such differences may be rooted in the different ways through which people have tried to negotiate similar social issues: during the LBA, the legitimising in the region was performed by burying into existing mounds, rather than by creating new barrows - the preferred practice for a certain period of time during the EBA.

However, it was possible to identify some general patterns of deposition among all the barrows. Although it is not always specified, there are two forms of burial of the body – in pits and on the surface - underlining two different ways of linking the newly-dead with the ancestral place. Of the very few metal objects found in the study area, the majority derives from the mortuary context and represent mainly gold and silver ornaments (e.g. Tcherniova mogila, Kamenna mogila, MIBC3, etc). This is an indication of the developing process of accumulation, in which the display of precious objects is an important means of status negotiation. The reasons for the rarity of copper and bronze grave goods are still unclear. Apart from accumulation, the other social practices documented on the settlements (fragmentation, structured deposition and use of fire) were practised in the mortuary arena as well. Sherds were found in the graves and in the memorial features (trizna). It is possible that the matching parts of the vessels were kept at the settlements but, so far, no such re-fitting investigation has been conducted. The graves themselves are a form of structured deposition, as are the pit deposition in some barrows (e.g., Tcherniova mogila) and the pottery scatters found in the mounds (e.g., Barrow Four). The use of fire in the barrows is documented by the presence of hearths (e.g. MIBC2), bonfires (e.g. Goliamata mogila) and ashes with charcoal (e.g. Ovchartsi barrow). This is important evidence for overall continuity of social practices between the domestic domain of an earlier period (the LCA) and the mortuary domain of a later period (the EBA) and is rarely found in any other part of the Balkans.

This pattern of complex similarity is reinforced by the similar ways in which the barrows and the tells grew from smaller, lower monuments to fully-formed, broad and high landscape features. The clearest mortuary example is at Goliamata mogila, where a complex pattern of combined vertical and horizontal growth is found – readily comparable to the way in which tells grow.

A relatively clearer pattern of site development through four different types of deposition (in pits or on the surface, with or without a mound) can be observed in barrows with more than ten graves (Goliamata and Manchova mogili). At the same time, these large barrows do not contain many special finds in comparison to certain other, smaller barrows, such as exotic objects in the graves, feasting or memorial features. On the contrary, the majority of the other barrows that contain up to six graves present different combinations of special features: e.g. in Tcherniova mogila, all of the graves have organic covers. There arises the possibility that large, multi-interment barrows are an alternative to smaller barrows with special mortuary practices or exotic grave goods. The combined evidence from the mortuary domain in Maritsa Iztok represents a dynamic form of interrelation between a specific and a general pattern of deposition. This may indicate the tensions between local kinship group identities and wider regional identities.

There can be a great diversity of deposition patterns within each barrow (e.g., in MIBC3, one of the graves has no grave goods and red ochre, while the other contain red ochre, five vessels and a silver pendant) as well as diversity between all the barrows. Such diversity should be seen in the context of the diverse social and political backgrounds of the mourners celebrating the death of a relative or kinsperson. Apart from being a personal act of devotion, a burial is also an important social act, since the community has lost a member. In such a joint personal and communal act, the reinforcement of such a rite of passage may raise many social issues (e.g., by an old rival or a grateful son, etc.), which ultimately affected the specific practice of deposition. Thus, a commonly agreed standard is followed (e.g. in pit, crouched on left side, with red ochre or any other combination) but, at the same time, a specific (personal) contribution to the deposition may have been made as well (e.g. the covering of the body with pebbles, the offering of a gold pendant or the deposition of ash and charcoal as a memorial rite).

An important additional factor in mortuary practice is the landscape position of the mound. Thus, for example, the two graves in MIBC2 have no grave goods and only one of them has red ochre. But the latter is the only one in the cemetery that has a panoramic view over the Sokolitsa valley and can, conversely, be seen widely from there. Therefore, I would suggest that this a symbolic link between the people buried in the barrow, the people at the funeral and the living who either pass through or live in the Sokolitsa valley. The barrow acts as a visual focus for a potentially long-lasting cultural memory, just as the burial rite itself is a shorter-term focus for the whole community, perhaps symbolized for distant kin by the form of the barrow, and, at the same time, a vital source of memorialisation for close kin. Furthermore, Barrow four and Kurdova mogila, whose graves, as a general pattern, do not contain grave goods and red ochre, are in a special spatial location, which is equally accessible from the two valleys. This is the first time in which equal accessibility from the Sokolitsa and the Ovcharitsa is

attested, after a period when the microregion was a zone dominated mainly by barrows. Finally, the same specific barrow location is valid for the Ovchartsi barrow, where recent (summer 2002) unpublished investigations have revealed 15 burials dated to the MBA/LBA (S. Alexandrov, pers. comm.). Therefore, the change from a time in which barrows were the sites with easiest access to a period when there was equal access to the sites from both main valleys was an important development, which can be dated towards the middle and end of the BA.

The specific location of Kurdova mogila is probably related to the collective burial which it contained. There are two possibilities: either the spatial link created by the barrow location is symbolically reinforced by the link between the large number of people buried together or the converse. Perhaps there was a direct relationship between the size of the buried group and the size of the territory readily accessible from the barrow.

Another collective burial lies within MIBC barrow 1 - the only one in the barrow with grave goods but which lacks the pebbles found in the other two graves. The other collective burials are at Goliamata mogila, where there are four pairs. These double burials should be seen in relation to the overall specific depositional pattern at the barrow. The two pairs containing babies are buried in the sterile soil, while the other two are set within the body of the mound. The significance of these two particular collective burials is reinforced by the presence of stelae above one of the babies' graves and the deposition of ten vessels and an awl in the woman-and-child's burial. Both depositional patterns are unique in the study area and indicate local kinship patterns of identity.

The last of the collective burials occurs in the LBA cemetery of Polski Gradets. As previously mentioned (see p. 117), the primary data is insufficient for a conclusive interpretation. However, it is sure that collective burial was not a novelty in the region and its appearance at the Polski Gradets pit site should not be envisaged as an exceptional pattern of deposition – rather, a return to ancestral practices which linked the present to the past.

Last but not least is the evidence for an ancestor cult observed in at least three cases – the missing skulls in Aldinova mogila and Grave 27 from Kajrjaka, the missing mandible at the Polski Gradets pit site and the missing hands from the burial in MIBC2. Buchvarov (1999) has summarised the Early Neolithic evidence for missing body parts, including the secondary deposition of mandibles, for the whole of the Balkans. He concluded that this was a deliberate practice aiming at underlining the high status of the deceased. On the basis of evidence from the study area, I should develop further the argument that not only the mandible but also other human bones were taken from the decayed body and were deliberately kept among the living as one of the forms of maintaining relations with the ancestors - another practice which the barrow mortuary zone shared with the domestic arena. I would also claim that such a practice did not stop at the end of the Neolithic but rather developed and continued during the BA, thus confirming the significance of the ancestors' cult through time – a fact already observed in the settlement arena.

Burial practices in the study area show a tension between the past habitus and what new or divergent social practices were possible in the present. Resistance to past practices may have been effected in the name of different personal or group identities, or through emphasis on new rituals, as a choice of moving away from the past which grounded those communities. Continuity of an ancient habitus linked those communities to the ancestors, with all of the social power created and delivered by such links. What is particularly striking in the study region is the transposition of a wide range of social practices from one social arena – the domestic – in the LCA to a new arena – the mortuary zone – in the EBA. If continuity in basic aspects of the habitus is an indication of strong social continuity through time (cf. Frankel 2000), these elements of continuity at a period of crucial transition in the Balkans are highlighted in a clearer way than in any other microregion in this part of Europe.

The contacts

The lack of formal places for burial disposal in Drama suggests that social tensions in the region were negotiated by using different means. Given the present condition of the data, there are two possibilities that may have substituted for archaeologically visible burial practices. The first one concerns the idea that, insofar as there is no secure evidence for settlement activity during the BA, then the Kalnitsa study area was mainly used for structured deposition of exotic as well as quotidian objects. The second possibility is connected with the first one and concerns the deposition of exotic objects in quantity and variety not paralleled in the other two microregions. However, the second possibility can only be valid if what is published so far from Drama microregion as local BA material reflects the real balance or quantity of finds deposited there. What appears to have occurred is a rejection of a new development in the monumentalisation of the local landscape, in a way which seeks to compete with, or undermine, the ancestral values of those living on tells. The other side of the coin is that this resistance to innovations amounts to maintenance of traditional cultural values in the Kalnitsa valley.

8.2 Landscapes and settlement patterns

8.2.1 Location

The pattern of site location in the study area shows a clear spatial/chronological division. The first human occupation is along the South valley of the Sokolitsa river and such evidence is sparse to the North valley in the

Ovcharitsa river. The intensive inhabitation of the Ovcharitsa valley starts at the end of the CA and, in the following 2000 years, is densely settled by numerous barrows, one enclosure and one flat settlement. On the contrary, the Sokolitsa valley comprises mainly Neolithic and Chalcolithic settlements and formal deposition sites. The tell settlements are eventually re-settled towards the end of the EBA. One tell, one formal deposition site and a barrow cemetery are located in the interfluve (the two Polski Gradets sites and MIBC). The tell is first settled before the start of the BA, while the other two sites emerged during the BA. Therefore, there were exceptions to the prevailing pattern of valley occupation throughout the whole prehistoric site sequence in the study area. In the Drama basin, it is important to note the very small number of sites were occupied during four millennia of later prehistory.

The differences in elevation of site locations are due to the landscape particularities and there is a tendency for barrows to be situated on prominent places or hills. The undulating environment favoured site locations in generally flat areas or at least areas with not more than 50 steep slopes. There are variations in the aspect, with some preferences to North West and South West.

An important result of the current study is that no constraining link has been identified between settlement location and local soil types. There are various combinations of types and amount of soils around the settlements, which suggests that the subsistence strategies and cultivation technologies practices by prehistoric communities in the study area were flexible and not dependent on a single environmental factor. The most extreme example in this sense is the Polski Gradets tell, which lacks meadow soil up to one km from the site and beyond that point the amount of meadow soil is not sufficient for cultivation. Such a pattern has two important implications. First, smolnitsa and cinnomonic forest soil were suitable as arable soils in both the Copper Age and the Bronze Age and meadow soil was not a prerequisite for cultivation. Secondly, the choice of site location is not predefined by certain environmental variables but is a complex decision based on both social priorities and environmental availabilities. In the present devastated state of the environment in the Maritsa Iztok study area, it is difficult to draw some general conclusions of soil distribution around the sites. However, the available data suggests that, during the Neolithic, the sites are located in areas with both a zonal type of soil distribution (e.g. Klisselika tell) and a patchy type of soil distribution (e.g. Obrutchishte flat site). During the LCA, a tendency is observed towards the zonal type of soil distribution, in this case dominated by meadow soil. During the BA, the tell occupant re-used both patchy and zonal soil distributions, while the new settlers occupied areas that probably had a zonal type of distribution.

There was no hindrance to prehistoric subsistence practices in the study regions from impenetrable forests. The later prehistoric vegetation most probably consisted of mixed decidious woods, which were gradually cut down. The main species were oak and hornbeam, associated with lime, elm and sporadic beech stands. The wet areas favoured the development of moisture-tolerant species such as maple, willow and poplar. Herb and bush communities were also widespread as under-brush. The decrease of forest cover is more obvious at the time of the Bronze Age but the lack of evidence for severe erosion damage in any of the study regions suggest that the forest clearance was a slowly developing, long-lasting process beginning in the Neolithic. In addition, some of the weed species (e.g. sorrel, fat hen, etc.) distributed in the study area are generally connected with human impact. The range of cultivated plants is typical for temperate climatic conditions – several types of wheat and barley, minor distribution of other cereals such as millet and the common occurrence of legumes and weeds, as well as some fruits and nuts. This low-level human impact on local forests is consistent with the population sizes inferred for the tell settlements and also with their associated small-scale subsistence practices.

8.2.2 Logistics

Cost surface analyses have provided important information about the relative distance between sites and produced a general pattern of inter-accessibility, in which easy and rapid access hardly became an issue even in the BA. This is mainly due to the predominant settlement pattern – more dispersed in the Neolithic and the CA, more clustered in the BA. The differences in site densities may have affected the actual time and efforts to reach particular points in the landscape but they have not affected the route tracks used to reach the same particular point.

Logistical network analyses of all the sites have shown a high degree of repetition. The two main routes were along the valleys of the rivers Sokolitsa and Ovcharitsa, which dominated each logistical network. Apart from these main, or “permanent”, routes, there were small routes between the sites that, depending on the frequency of their appearance in logistical networks, may be divided into “primary” and “secondary” routes – the former from the main valleys towards a group of sites, the latter the final paths to individual sites.

There are at least two cases (Goliamata mogila to Iskritsa dwelling site/Iskritsa pit site to Goliamata mogila. and Polski Gradets tell to the adjacent Klisselika and Gudgova tells) in which there are alternatives routes between pairs of sites, suggesting that journeys with different aims may have been undertaken via different paths, i.e. the possibility of round trips.

The permanent routes, the "primary" and "secondary" routes and the possibility of round trips are conclusive evidence for the existence of a developed route network. Some of the sites have emerged along already existing routes that connected earlier sites – e.g., all the sites in the Sokolitsa valley are later (i.e., Copper/Bronze Age) than the Neolithic sites on the "original" Mednikarovo-Klisselika Neolithic route.

Whether or not such paths have existed or have been in use is difficult to claim with certainty. However, the high level of repetition of the tracks is a strong argument that such paths have existed. The use of each particular path by any old and /or new inhabitants of the landscape was probably not decided upon immediately or on a permanent basis but, while walking through the landscape, people have experienced the efforts, time and visibility in reaching certain parts of their own surroundings and have (re)-discovered the paths most relevant to their own communication needs. These paths highlight the social factors of site connections – the people whom walkers would have met on their way or avoided, as much as the views which would have been available or not. Following traditional routes would have led to repeated social encounters, which maintained wider social relations through practices such as enchainment.

8.2.3. Visibility

The viewshed analyses from single sites (summarized in Table 8.2.1) have confirmed that visibility, and therefore also invisibility, were both important factors in site location and site inter-relations. The aim of the present section is to establish the background visibility pattern valid for the Maritsa Iztok area.

Cumulative viewsheds from sites

As stated above (p. 41 - 42), a cumulative viewshed analysis was performed that united each individual viewshed (n=28) in one common visibility grid. It was used to investigate both the landscape visibility from sites and site intervisibility. The landscape part of the analysis revealed that there is no point in the landscape that is seen from all the sites but rather that as much as 36% of the Maritsa Iztok area is not visible from any of the sites (Table 8.2.2). The maximum number of sites that share visibility over one and the same area is 14 (50%). They see just one out of 22,186 cells in the elevation/visibility grid. This is the hilly area lying between the two Polski Gradets sites. Thirteen sites can see 8 cells and so on in descending order, as shown in the attribute table and legend of the cumulative viewshed of all the sites (CDFig.502). In percentage terms, the figures are as shown on Table 8.2.2. The percentage of common visible areas, from 9 sites upwards up to 14, is less than 1% and it is not included in the table. This means that the biggest proportion of the landscape seen from any one site is 22% and only one site has such a "high" visibility.

The results of both type of visibility – intervisibility between contemporary sites and one-way visibility from later to earlier sites are summarized in Fig. 8.2.1. They show that, during the ECA, there was complete site intervisibility (100%), while, during all later periods, the intervisibility between sites was equal to, or less than, 23%. The lowest percentage intervisibility - just 8% - relates to EBA settlements and EBA barrows, in contrast to barrow-to-barrow intervisibility, which reaches a relatively high 19%. One-way visibility never reached more than 20% of all the sites in any period. From the Late Neolithic up to the LCA, the visibility varies between 14 -19%. A similar percentage for one-way visibility of earlier sites (18%) is valid for EBA settlements, while the EBA barrows have a very low one-way visibility of earlier sites – just 5%.

In summary, the single or shared visibility from the sites over the landscape does not exceed 25% of the whole study area and generally the sites have local, rather than long-distance, landscape visibility.

The pattern of individual site visibility is more dynamic and apart from the ECA cases, from all sites in all periods, not more than 1/5 of earlier sites are visible/intervisible from contemporary sites. The visibility factor was most important during the CA, when the percentage of both intervisibility with contemporary sites and visibility to earlier sites was the highest. In contrary, the least visibility over both earlier sites and contemporary settlements characterised barrow location in the EBA

Number of sites	**0**	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**
% of visible area *	36	22	14	10	6	4	3.5	2	1.4

Table 8.2.2 Percentage of visible area from the sites

* the figures are rounded, rather than exact, values

SITE NAME	Tell Galabovo	Obrutchishte flat site	Atanasivanova mogila (barrow) site	Mednikarovo tell	Iskritsa pit part	Iskritsa dwelling part	Karaivanovi mogili barrow cemetery (KMBC)	Klisselika tell	Gudgova tell	Polski Gradets tell	Polski Gradets pit site	Gonova mogila	Ovcharitsa I flat site	Ovcharitsa II site	Aldinova mogila	Ovchartsi barrow	Malkata mogila	Goliamata mogila (the big barrow)	Barrow four	Goliama Detelina flat site	Tcherniova mogila 1	Tcherniova mogila 2	Tcherniova mogila 3	Tcherniova mogila 4	Taniokoleva mogila 1	Taniokoleva mogila 2	Taniokoleva mogila 3	Taniokoleva mogila 4	Kurdova mogila	Mednikarovo-Iskritsa barrow cemetery (MIBC) 1	Mednikarovo-Iskritsa barrow cemetery (MIBC) 2	Mednikarovo-Iskritsa barrow cemetery (MIBC) 3	Mednikarovo-Iskritsa barrow cemetery (MIBC)4	Manchova mogila
Tell Galabovo	XXX	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Obrutchishte flat site	+	XXX	-	-	+	-	-	+	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Atanasivanova mogila (barrow) site	-	-	XXX	-	+	-	-	-	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Mednikarovo tell	-	-	-	XXX	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Iskritsa pit part	-	-	+	-	XXX	-	-	+	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Iskritsa dwelling part	-	-	-	-	-	XXX	-	+	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	+	-	-	-	-
Karaivanovi mogili barrow cemetery (KMBC)	-	+	-	-	-	-	XXX	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Klisselika tell	-	-	-	-	+	+	-	XXX	?	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Gudgova tell	-	-	-	-	+	+	-	+	XXX	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Polski Gradets tell	-	-	-	-	-	-	-	-	-	XXX	-	-	-	-	-	-	-	+	-	-	+	-	-	-	-	-	-	-	+	-	-	-	-	-
Polski Gradets pit site	-	-	-	-	-	-	-	-	-	-	XXX	-	+	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Gonova mogila (barrow)	-	-	-	-	-	-	-	-	-	-	-	XXX	+	-	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ovcharitsa I flat site	-	-	-	-	-	-	-	-	-	-	-	+	XXX	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ovcharitsa II site	-	-	-	-	-	-	-	-	-	-	+	-	-	XXX	-	+	-	-	-	-	-	+	-	-	-	-	-	-	-	-	-	-	-	-
Aldinova mogila	-	-	-	-	-	-	-	-	-	-	-	+	-	-	XXX	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ovchartsi barrow	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	XXX	-	+	+	-	+	+	+	-	-	-	-	-	-	-	-	-	-	-
Malkata mogila (the small barrow)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	XXX	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Goliamata mogila (the big barrow)	-	-	-	-	-	-	-	-	-	+	-	-	-	-	-	+	-	XXX	+	-	+	+	+	+	-	-	-	-	+	-	-	-	-	+
Barrow four	-	-	-	-	-	-	-	-	-	+	-	-	-	-	-	+	+	+	XXX	-	+	+	+	+	+	-	-	-	+	-	-	-	-	+
Goliama Detelina flat site	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	XXX	+	+	+	+	+	+	+	+	-	-	-	-	-	+
Tcherniova mogila 1	-	-	-	-	-	-	-	-	-	+	-	-	-	-	-	+	-	+	+	+	XXX	N/A	N/A	N/A	+	+	+	-	-	-	-	-	-	+
Tcherniova mogila 2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	XXX	-	-	-	-	-	-	-	-	-	-	-	-
Tcherniova mogila 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	XXX	-	-	-	-	-	-	-	-	-	-	-
Tcherniova mogila 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	XXX	-	-	-	-	-	-	-	-	-	-
Taniokoleva mogila 1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	+	+	+	+	+	+	XXX	N/A	N/A	N/A	+	-	-	-	-	+
Taniokoleva mogila 2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	XXX	-	-	-	-	-	-	-	-
Taniokoleva mogila 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	XXX	-	-	-	-	-	-	-
Taniokoleva mogila 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	XXX	-	-	-	-	-	-
Kurdova mogila	-	-	-	-	-	-	-	-	-	+	-	-	-	-	-	-	-	+	+	-	-	-	-	-	+	+	-	-	XXX	-	-	-	-	+
Mednikarovo-Iskritsa barrow cemetery (MIBC) 1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	XXX	-	-	-	-
Mednikarovo-Iskritsa barrow cemetery (MIBC) 2	-	-	-	-	+	+	-	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	XXX	+	-	-
Mednikarovo-Iskritsa barrow cemetery (MIBC) 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	+	XXX	+	-	-
Mednikarovo-Iskritsa barrow cemetery (MIBC)4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	+	+	XXX	-	-
Manchova mogila	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	+	+	+	+	+	+	+	+	-	-	-	+	-	-	-	-	XXX

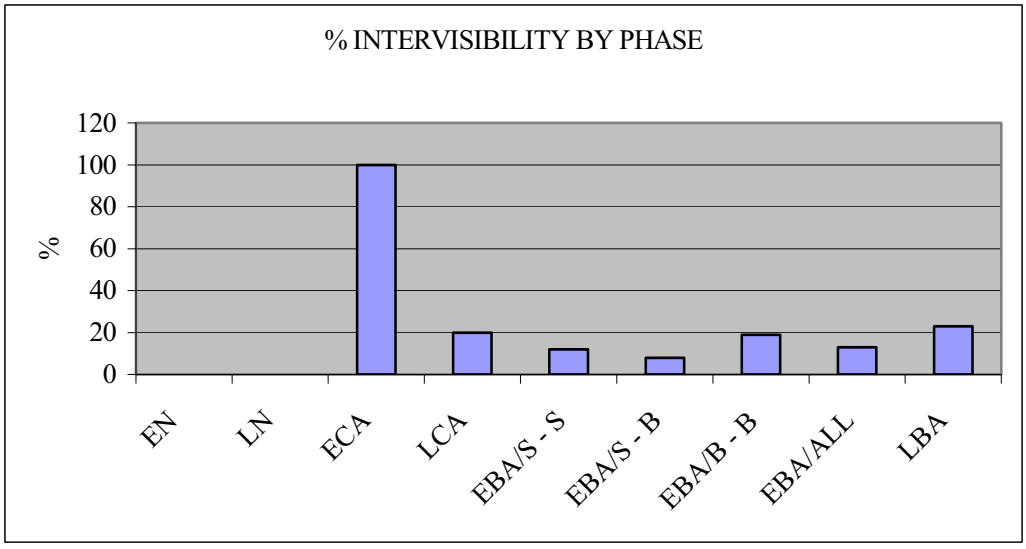
Tabl. 8.2.1 Intervisibility relationships between all the sites in Maritsa Iztok

CONTEMPORARY SITES

PHASE	% INTERVISIBILITY
EN	0
LN	0
ECA	100
LCA	20
EBA/S - S	12
EBA/S - B	8
EBA/B - B	19
EBA/ALL	13
LBA	23

EARLIER SITES

PHASE	% VISIBILITY
EN	0
LN	17
ECA	14
LCA	19
EBA/S	18
EBA/B	5
EBA/ALL	8
LBA	7



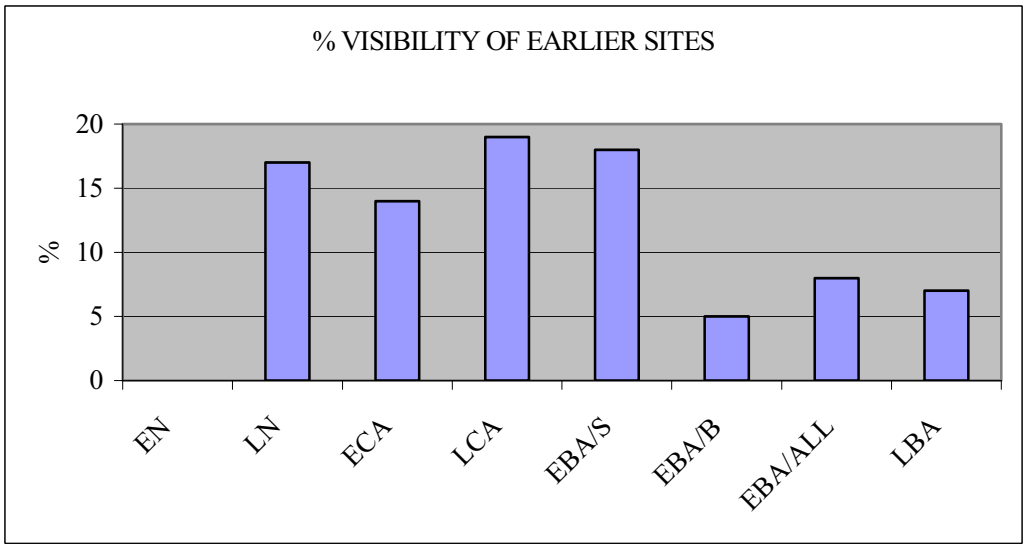


Fig. 8.2.1 (a) site intervisibility by period; (b) one-way visibility of earlier from later sites, by period

Random point visibility

As stated above (p. 42), four cumulative viewsheds were taken from a series of random points. Interestingly, the cumulative viewshed from the actual site location shares similar patterns of landscape visibility. The areas most visible from the random points are, in general, also the areas most visible from the sites as well. Therefore, as a whole, site location has not been significantly affected by overall landscape visibility.

No sites are located in the most visible places as shown in the four different sets of random points. For the sake of simplicity and comparability of results, comments are made on the 1000-point random-point viewshed. In the cumulative viewshed conducted for 1000 random points in the landscape, the sites are located in areas less than 20% visible from the random points. This may be interpreted as a pattern in which the sites were located in regions with generally not very good inward visibility. However, the maximum percentage of the visible area from the same 1,000 points is 37%, which means that at least three sites (Goliamata, Manchova and Ovchartsi barrow) are located in an area with relatively high landscape visibility in the context of all possible visible areas in the study region. The largest number of sites, however, falls in area with a relatively low visibility. The visibility of the areas in which the sites are located is given on CDFigs.503-506 and summarized in Table 8.2.3:

Percentage of visible landscape area from 1000 random points	**Sites located in the same area**
0.1 - 3.7	KMBC, Mednikarovo, MIBC1, 3 and 4, Polski Gradets pit site, Ovcharitsa II, Barrow4
3.8 – 7.4	Galabovo tell, Atanasivanova mogila, Iskritsa dwelling site, Klisselika tell, Gudgova tell, Ovcharitsa I, Goliama Detelina flat site, Aldinova, Tcherniova and Taniokoleva barrows
7.5 – 11.1	Obrutchishte, Iskritsa pit site, MIBC2, Polski Gradets tell, Gonova, Malkata and Kurdova barrows
11.2 – 14.8	Goliamata and Manchova barrows
14.9 – 18.5	Ovchartsi barrow

Table 8.2.3 Relative visibility of sites from a 1,000 random-point viewshed analysis

Visibility from paths

The general landscape visibility follows a pattern in which the Southern sites have a panorama over the Southern valley, while the Northern sites can mainly see the Northern valley. This is due to the landscape particularities of the study area and the pattern can be broken down only while walking across the region. It is worth noting that this visual separation could, if desired, be emphasised in a strategy of creating two different "cultural worlds", each separate from, or opposed to, the people in the "Other" world. However, the relatively low static site and landscape visibility is compensated by a very high and repetitive visibility from paths between sites. This is especially valid for the barrows, whose location may have been a result of recurrent journeys during which visible places were spotted for the subsequent location of mortuary sites.

The sequence of landscape and site visibility changes with changing direction of destination (cf. Tilley 1994). Although, for example, the same general areas are visible from the path Galabovo –Iskritsa and Iskritsa – Galabovo, the perception is different while moving from East to West and from West to East. It is likely that these different perception views were structured in a landscape narrative and some specific and important places were monumentalised by site location. The Iskritsa site and MIBC have indicated that there was controlled visibility from some of the paths to the four barrows and to the two parts of the Iskritsa site. Therefore, it is possible that the monuments were constructed by following a specific pattern of access visibility, which should be repeated again and again in each journey to and from a site.

Landscape perception and shifts in static and dynamic visibility were important structuring elements in the inhabitation of the landscape. The silhouettes of tells, houses and barrows most probably were incorporated in a consistent and flexible landscape narrative, constructed and (re)conceptalized by the human dwellers.

8.3 Long-term trends in prehistoric life in South East Bulgaria

8.3.1 Patterns of dwelling in the landscape

The earliest occupation in the Maritsa Iztok study area has revealed that the first settlers dwelled in a landscape void of previous human occupation, which towards the end of the Neolithic had been transformed into a dispersed settlement landscape. During the ECA, the same pattern is observed but diversification of sites

started to appear and a new type of *place* emerged in the landscape – the formal area for pit deposition.

In the LCA, there was a densification in the settlement system and, in addition to the existing tells, new settlements (which later developed into tells) and deposition sites were established. The major settlement area was still the Sokolitsa valley. The LCA was a time of diversifying but not yet competing landscapes.

A major change took place in the structuring of the landscape at the very beginning of the BA. During the EBA1 phase, an enclosure and the first barrows emerged in the landscape. For the first time, the study area consisted of conflicting landscapes, in which the monumentalisation of "the world of the dead" was opposed to "the world of the living" (the tells). This opposition was reinforced by a clear spatial division – the new sites were established in the Ovcharitsa valley, while the old settlements were located along the Sokolitsa valley.

In the next period (EBA2), an attempt at reconciliation of the opposed landscape principles was made by the establishment of the MIBC between the two valleys. Along with the new barrows, a new flat settlement in the Ovcharitsa valley appeared that was inserted into the "barrow landscape". Perhaps during this period, one certain and two unconfirmed episodes of the re-settling of tells have taken place. The definition of the barrow landscape is confirmed by the relatively high percentage of barrow intervisibility, which stands in marked contrast to the very low barrow – settlement intervisibility.

By the end of the EBA (EBA3), all the ancestral tells were re-occupied. Most probably some of the existing barrows were re-used and some new barrows appeared. With a general dispersed (but more clustered in comparison to the CA) pattern of site location, this was a time of integrated landscapes in which the occupants effected a reconciliation of the two worlds – the tells and their imitations, the living and the dead.

In the following MBA, for a period of at least 500 years, the landscape most probably has stayed unchanged. Only one tell was definitely inhabited in the antecedent landscape of tells and barrows.

During the last period in consideration (LBA), there was a dispersed pattern of contemporary sites. One flat site and two flat cemeteries (both on previous sites) were clustered in the Northeasternmost part of the study area. Some of the EBA barrows along the Ovcharitsa valley were re-used, while one new barrow cemetery was founded South of the Sokolitsa – most probably connected to the areas in the Sakar foothills. There was a weak pattern of monumentalization of the landscape: instead of building new monuments, there was rather a tendency towards incorporation of the ancestors' formal depositional places (a pit site and several barrows) into the new settlement pattern, while, for domestic activities, areas empty of previous settlements were preferred.

The landscape changes in the Drama microregion were not that intensive and on such a large scale. The initial occupation was in the flood plain and consisted of both a structured deposition place and settlement activity. The same dual type of activity later or contemporary with the last occupational phase of Gerena flat site was transferred to a small hill in the flood plain. It is possible that seasonal floods made the settlers move to the higher place but they remained in the flood plain. As an alternative to the lowland location of the settlements was the high position of the Kajrjaka flat site, which suggested a constant deliberate opposition between hill and plain, presumably throughout the entire later prehistoric occupational sequence of the Drama microregion. The most important difference from the Maritsa Iztok study area is the lack of any mortuary monumentalization of the landscape, in contrast to the growth of the Merdzumekja tell. The idea of "barrows" as mortuary monuments, visually reminiscent of tells, was clearly part of the regional stock-in-trade of social practices; in contrast to the Maritsa Iztok area, the communities of the Drama basin chose not to draw upon this cultural "resource", preferring to exchange exotica from the Aegean or the Levant.

In summary, the landscape in the study area was in constant but gradual change. There were moments of tension between "different" landscapes, as there were moments of negotiation between members of the social networks which criss-crossed the landscape. The social transformation of the landscape can be envisaged and interpreted in the context of the social change and continuity in prehistoric life in the study area.

8.3.2 Continuity and change

Before turning to the final reconstruction of prehistoric life in the study region, an extended comment should be made on a particular issue that the current study has challenged and which in the following concluding claims is integrated into a consistent hypothesis of social continuity.

So far it is still widely accepted that the EBA agriculturists in Thrace (Ezero culture) buried their dead in flat cemeteries on the basis of a single cemetery (Kalchev 1996). Such a claim reinforces the false opposition that agriculturists are buried in flat graves, while nomadic stock-breeders are buried in barrows. The evidence from Maritsa Iztok questions the validity of this claim. The BA chronology of the barrows was claimed not on the basis of any datable material or 14-C dates but following the cultural historical interpretative framework, in which certain features of material culture are connected to a certain type of ethnic group. In this particular case, the barrows were associated with the pit grave culture and therefore dated to the EBA. There is no other evidence to support such date and I should argue

that the appearance of barrows should not be restricted to the BA or indeed to nomadic societies.

In order to bridge the gap between a) the chronology (with no 14-C date provided for either periods) and b) the false ethnic opposition, I should incorporate the Maritsa Iztok data into a wider context of mortuary evidence. During the Late Copper Age, the flat cemeteries in North Bulgaria and the barrows in Hungary have appeared as a consequence of specific social developments in these areas (Chapman 1994). Formal burial areas clearly contemporary with those in North Bulgaria and Hungary are not known in the study area. However, it is not impossible that similar processes that have led to the appearance of such monuments in these two areas took taken place in the Maritsa Iztok study area, as well. Moreover, as argued above, people from the study region were in dynamic interaction with communities beyond the Stara Planina Mountain, and may have been aware of the nature of mortuary practices there. I am far from saying that identical social processes may have led to an identical response to social tension, or that the concept of burial domain has "migrated" from North to South. Rather, I am trying to imply that the reasons underlying the establishment of a formal disposal area are not chronological but social. Moreover, some of the barrows in North Bulgaria have recently been re-dated from the EBA to the Transitional period (see p. 28) (Alexandrov, S. pers. comm.)

Finally, the striking similarity between the burnt house inventory from one of the Eneolithic houses on the Galabovo tell (p. 81) with the grave set of Gonova mogila and the general parallel with Csóngrad burial (p. 119 - 120) make the Chalcolithic date of the barrow plausible.

This attempt to reconcile the evidence from Maritsa Iztok with wider cultural practices is grounded in the idea that there are no sharp ends and beginnings of cultural phenomenon, which was neatly argued by Plog (1974) and more recently by Blake (1999). In the context of the Bulgarian evidence, continuity rather than change in material culture between the LCA and EBA has been argued for flint assemblages (Sirakov and Tsonev 1995) and stone axes (Terziiska 1994).

Therefore, I should suggest that it is possible that the barrows in Maritsa Iztok have appeared in the end of the CA as an alternative arena of social power to the existing arenas, which were not able to solve the increasing social contradictions deriving from new gender relations and intensified accumulation practices in the region. The visual imitation of the tell is a local interpretation of the idea of "barrows".

If, however, the idea of "barrows" was not "local", their appearance in the landscape most probably triggered a series of social events performed by the locals, which aimed to re –establish and re-negotiate the status quo. The most obvious response was to incorporate the barrows into the local social value system by burying the newly dead into the existing mound, hence turning it into an ancestral place. This process is well expressed in the gradual horizontal and vertical expansion of Goliamata mogila. Another possible integrating practice may have been the subsequent location of barrows and sites in which visual links or cost distances were important issues.

In either case, the appearance of the barrows was not separate from the social life of the inhabitants in Maritsa Iztok, who, either through creation or consistent structuration, succeeded in integrating the burial mounds into their social landscape and internalising them as a crucial means of the expression of social power.

In summary, in the following reconstruction, the barrows are accepted as local features, whose appearance, growth and distribution is an important part of a more general process of successful social reproduction that operates in accordance with the local societies' world view, which was always stimulated and challenged by intra-social network relations and inter-social network contacts.

The late prehistoric evidence from the study area shows several levels of continuity. Since the earliest occupation up to the end of the LBA, similar social practices of structured deposition, fragmentation and the burning of houses have taken place in different contexts, thus creating a specific continuity in social issues in the late prehistory of the region. There are also general similarities in the material culture (such as flint, polished stone and bone tools, house construction, etc.), as well as in site occupation and the repetitive use of paths. The monumentalisation of the landscape started in the middle/late Neolithic, by which time the first tell was already in a mature stage of development and which was standing as a significant social landmark of ancestral power. The social construction of the landscape continued through various forms of human occupation, with a dramatic declaration of deliberate landscape monumentalization represented by the appearance of barrows.

The notion of continuity does not exclude change and development. The evidence for multifaceted continuity in the study area suggests that there was no radical change of population, but rather there was change in social structure. Social diversification on the basis of gender, kin rivalry or personal disputes over prestige and power may have triggered social tension, which was not possible to settle within existing forms of social negotiation. In such a case, successful social reproduction was dependent on a radical change of communication means. The first time in which a substantial change in social structure is documented is in the developed CA, when new settlements have emerged together with formalized areas for structured deposition. The second time of explicit social tension is at the end of the Chalcolithic and the

beginning of the BA when, in two of the three study microregions, people have tried to solve existing social tensions by the abandonment of the old settlements along the Sokolitsa river; by subsequent settlement along the Ovcharitsa valley; by following a highly formalized pattern of structured deposition in the form of multiple ditch enclosure and burial mounds; and finally by gradual re-occupation of the old settlements. Landscape was always a mediator in the social discourse that in this case was executed though the deliberate distancing of the barrows from the antecedent past additionally supported by the very low one-way visibility from the barrows towards earlier sites.

The last case of visible change in social development of the study area is at the end of the BA, when only the mortuary domain was used as a link with the antecedent landscape, while spatial continuity of settlement activities and monumentalization of the landscape were not present.

As a concluding sentence, I propose the summary comment that landscape, material culture and society in the late prehistory of South East Bulgaria were in constant and dynamic interrelation, for which both change and continuity were equally immanent.

Conclusions

The current research was conducted according to some aspects of the contemporary theoretical and methodological framework of British archaeology. It has benefited from the British archaeological traditions of microregional studies and material culture studies, as well as from the insights gained from discourses in social and landscape archaeologies. A contribution to the general methodological diversification in archaeology was made by a vindication of Site Catchment Analysis (SCA) and by the joint application of GIS studies in both landscape and environment.

SCA had lost its analytical potential because a false opposition between the social and the economic was created by the dominant post-processual interpretative fashion in British archaeology in the last two decades. I maintain that SCA is an important method of any settlement pattern study, in which the balance between the number of factors that have constrained and structured the life of the community in consideration is very important.

The GIS technique provides new tools for SCA, which in addition enables the integration of both landscape and environmental analysis, resulting in a multi-faceted reconstruction of the link between the people and their surroundings.

The introduction of the concepts of *landscape* archaeology and *social practices* has enabled the recognition of the crucial links between the identity of people, places and objects. The identification of a set of social practices has integrated the Bulgarian evidence in a broader context of human development. It also has contributed to the radical re-interpretation of most of the current explanations of the evidence at the study area.

The majority of these re-interpretations are build upon the existing hypothesis and observations of Bulgarian archaeologists, which, however, were not developed to their full explanatory potential. Such a failure is mainly due to the lack of a sophisticated interpretative framework in Bulgarian archaeology, in which theory, evidence and explanation are integrated in a coherent narrative. In this sense, I believe that the current research has made a breakthrough in filling the interpretative vacuum in Bulgarian archaeology.

The main results of the study can be summarized in three major points.

The reconstruction of past landscapes in the three microregions, together with the reconciled concepts of landscape and environment, have facilitated the reconstruction of past settlement patterns, resource potential and inter-site transport networks in each of the three microregions.

The second major achievement is that, through the evaluation and re-interpretation of site evidence for all settlements and burials, it was possible to make a comparative interpretation of diachronic changes in settlement, society, material culture and landscapes in the three microregions.

Last but not least, the cultural historical interpretative paradigm was challenged by suggesting alternative approaches, in which not the things (and indeed neither the people nor the places) were the major objects of study but rather the mutual dependence and interrelation between these three main components of identity.

Suggestions for future research

There are three main directions in which the current study could be developed. The first one is in the development of the social aspects of the study by the integration of more precise contextual data, especially from the poorly published sites (e.g. Ovcharitsa II). Contextual and intra-site analyses should provide evidence for social action, as well as structure, order and diversification through time, thus helping to outline the possible dynamic of social relations that have resulted in the above-documented social change and continuity.

The other major direction lies in taking GIS applications further, as one possible development is the investigation of the visibility from paths, in which the visibility from each segment of change of direction is going to be explored, in order to reconstruct a sequence of views (cf. Tilley 1994) that may have affected the social construction of the landscape. Another application is the extraction of “natural pathways” at Maritsa Iztok based on a site-free landscape, which involves a target-oriented cooperation with a mathematician and/or related IT specialist. This would give the opportunity to compare the actual and the “natural” paths and to shed some light on the site location in respect of movement prior to site dwelling.

Finally, in case of any new field investigations, samples for 14-C dating should be taken from both domestic and burial domains in order to justify the relative chronology of the sites. A programme of AMS radiocarbon dating and isotopic dietary analyses of the burials from tells and barrows would provide important new information about changes between the copper Age and Bronze Age.

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Appendix A
Description of routes to/from sites in the study area based on GIS analyses

Galabovo tell

The main South route from Galabovo connects the tell with Gudgova tell (CDFig.8). The first segment of the path connects Galabovo with Atanasivanova mogila (CDFig.9), followed by the two Iskritsa sites (CDFig.11), finally reaching the Klisselika (CDFig.12) and Gudgova tells. The path gradually ascends the Sokolitsa valley, following the gentlest slopes. There are two branches from the path – to the Obrutchishte flat site and Mednikarovo tell. The first one bifurcates from the main route roughly 4.5 km from Galabovo, ascending South East for another 1.5 km to the Neolithic flat site. The second one forks to the right 8 km from Galabovo, ascending for 3 km to the South East until it reaches Mednikarovo tell (CDFig.13).

The general visibility from the South route is 2 km to the North and 1-2 km to the South along the Sokolitsa valley (CDFig.14). There are also scattered views over the hilly areas South of the flood-plain. All sites in the valley (Atanasivanova mogila, both Iskritsa sites, Klisselika tell) are on the main route and share similar views – no visibility North and South of the valley and intervisibility between the sites from the flood-plain. It should be mentioned, however, that the distance between the sites varies from 100 m to 5 km. On a clear winter day, the sight link between the most remote sites is possible but this is less likely in full-leaf spring, summer and autumn with natural woodland vegetation. Moving Eastwards from site to site and adding new segments to the main route, the visibility is increasing mainly in a Southeasterly direction to the mountain foothills.

The main North route connects Galabovo tell with Gonova mogila. In contrast to the South route, none of the sites is located on the path. There is a separate track to each of the 15 sites in the North and North East parts of the study area (CDFig.15).

The visibility from the first segment of the South route – to Atanasivanova mogila (for Obrutchishte see p. 90 - 91.) - is very good over the Sokolitsa valley up to the point of the Iskritsa site and subsequently towards the North part of the valley (CDFig.18). The sites visible from that path are Obrutchishte, the Iskritsa pit site, Klisselika and Gudgova tells. In published reports, the site of Iskritsa is implicitly accepted as having two phases, hence being, in fact, two sites – the "pit" site and the "dwelling" site. In my opinion, such a division is not very well supported and I should argue that the site was only one but with a long horizontal occupational sequence (details in section 5.6). In the current GIS coverage, the site is presented by two points (two different parts of the same site) and hence the positive visibility for one of them and the invisibility for the other.

Assuming that Iskritsa was a single site, it means that some parts of it were visible, while others were not.

Despite the distance – over 5.5 km - between the last point of the path and the two tells in the Southeasternmost part of the study area, it is important to point out the *possibility* for visual contact with earlier and contemporary sites, while walking between Galabovo tell and Atanasivanova mogila.

The paths to both Iskritsa sites and their visibility are very similar and will be discussed together. Both paths share visibility over the same sites (Atanasivanova mogila, Klisselika and Gudgova tells) and landscape (very good over the valley, and East of the Iskritsa sites over the Northern part of the valley) (CDFig.19). There is only one, very important difference between the two viewsheds. From the path to the Iskritsa pit site, the Iskritsa dwelling site is not visible, although the sites are 500m apart. This confirms the particular visual status of the dwelling site, which appears to be restricted from the West. The path to the dwelling site (CDFig.11) passes by the pit site, which assures a view over the Iskritsa pit site (CDFig.20).

The paths to Klisselika (CDFig.21) and Gudgova tells (CDFig.14) share similar visibilities but the views from the latter are denser towards the Easternmost parts of the study area. The general visibility is very good over the valley and with scattered spots towards the areas South of the valley. All the sites in the valley are visible from the paths.

The first segment of the North route is the path Galabovo – Tcherniova mogila (CDFig.22). The path follows the lowest area in the study region along the valley of the Ovcharitsa and has very good visibility over the area through which it passes (CDFig.23). There are single scattered spots and strips visible South East of the path towards the hilly central area of the study region. Six barrows, Goliama Detelina site and Polski Gradets tell are visible from the path.

Roughly 1.6 km before Tcherniova mogila, the path bifurcates, heading South East for 3 km when it reaches Kurdova mogila (CDFig.24). The path shares the same visibility over the valley as in the Tcherniova mogila case but it is better over the central and Eastern parts of the

study area (CDFig.25). Again, six barrows (4 with certain location and two with uncertain location) and Polski Gradets tell are visible from the path.

The next segment of the North route connects Galabovo with Manchova mogila (CDFig.26). The path turns right from the main route 13.6 km from Galabovo, ascending South South East for 1 km. It has a good overview of the valley up to the point of Goliamata and Malkata barrows (CDFig.27). It also has consistently visible areas in the Northeasternmost, central and Eastern part of the study area, as well as three tiny visible strips to the South of the path itself. Six barrows (surely five and one (Taniokoleva) with only one of its possible locations) and the Goliama Detelina flat site are visible from this path.

Following the same main North route 800m before Manchova mogila, the path bifurcates, reaching the EBA settlement of Goliama Detelina after 300m (CDFig.28). The visibility from that path is generally the same as from the path to Manchova mogila but it has less consistent and dense views over the North Eastern, Eastern and central part of the study area (CDFig.29). Seven barrows are visible from the path.

The branch that turns right from the main route and from which starts the segments to Goliama Detelina and Manchova mogila is the path to Taniokoleva mogila (CDFig.30). The route ascends for 2 km to the South East and shares the general landscape visibility of the two previously discussed paths (CDFig.31). The same high site visibility is characteristics for this path as well - six barrows and the EBA Goliama Detelina site.

The next two sites – Goliamata (CDFig.32) and Malkata mogila (CDFig.33) - have a common branch from the main route 16 km after Galabovo tell. It ascends for 700m to the South East, when it forks and, after 300m to the South, each segment reaches its respective barrow. These almost identical tracks result in very similar path viewsheds (CDFig.34). The path to Goliamata mogila has a slightly more consistent general view (CDFig.35). In addition to the previous paths' good view over the valley, the more Easterly position of the two barrows assures visibility over the relatively low-lying parts to the North East and the Eastern hilly areas of the study area. There is also a single visible strip South East of the path towards the central part of the region. One and the same sites are visible from both paths - seven barrows (surely six and one (Taniokoleva) with only one of its possible locations), the Goliama Detelina flat site and Polski Gradets tell.

Continuing along the North route, the next fork is for the path towards Barrow IV, accepted as belonging to the same barrow cemetery as Goliamata and Malkata mogila, although it is more than 1 km to the South East (CDFig.36). The path ascends to the South South East for 2 km and has good visibility along the valley up to the point of Ovchartsi barrow and scattered visible spots to the South East, East and North East (CDFig.37). Seven barrows (surely five, one with 3 out its 4 possible location, and one (Taniokoleva) with only one of its possible locations) and the Goliama Detelina flat site could be seen from the path. It is possible that Aldinova mogila and the Ovcharitsa II enclosure in particular have also been visible from the path, since before their migration to the centre of the cell, they were very close to the edge of a visible/invisible cell.

The path to the next barrow of Ovchartsi is one of the shortest branches in the North part of the study region (CDFig.38). It is 700 m long to theEast South East. It shares the visibility of the previously discussed paths and in addition there is good visibility towards the hilly areas South East of the path, as well as to the North East parts of the study region (CDFig.39). Six barrows (surely five and one (Taniokoleva) with only one of its possible locations) and the Goliama Detelina flat site are visible from this path. Three other sites – Aldinova mogila, Barrow 4 and the Ovcharitsa II enclosure - are very close to visible cells and it is possible that they may have been also visible from the path.

As already mentioned, the route with the best visibility over the landscape in the Northern part of the study region is Galabovo tell – Polski Gradets tell. Roughly 20 km after Galabovo tell, the north route bifurcates and the South branch ascends East South Eastwards towards Polski Gradets tell for 5 km (CDFig.40). The path has a very good panorama over the Ovcharitsa valley up to the end of the GIS coverage, a relatively good view over the Eastern part of the study area, as well as scattered visible strips in the central part of the region (CDFig.41). The same high visibility is valid for sites as well. Nine barrows are visible from the path (surely eight and one (Taniokoleva) with only one of its possible locations) and three flat sites. Barrow 4 has the same uncertain visibility status as mentioned above.

It is worth discussing the visibility over the neighbouring site Polski Gradets pit site (for site location, see section 5.10.3). Three of the possible corners of the site (hence the area they enclose) are visible, and only one is not. Cell size and site location within a cell have already been discussed (see p. 40) so here it is only to be mentioned that most probably, while walking along the path, some parts or whole the site were visible.

The path to the Polski Gradets pit site forks from the branch to Polski Gradets tell and heads 2.5 km to the East (CDFig.42). The general visible areas from the path are as in Polski Gradets tell viewshed but less dense in the Eastern

path of the study area (CDFig.43). The number of visible sites is also fewer - eight barrows are visible from the path (surely six and two (Taniokoleva and Tcherniova) with only one of their possible locations) and two flat sites. Barrow 4 is again close to the edge of visible /invisible cells.

The visibility from the paths to the last four sites is very similar and will be discussed in general. Only the tracks of each path will be discussed in some detail.

Three km after the Polski Gradets crossroad is the branch leading to the Ovcharitsa II enclosure (CDFig.44). It is 1km long and heads to the East. The next site – Aldinova mogila (CDFig.45) – is the only site in the Northern part of the study region that is located almost on the main North route. The segment leading to the barrow is less than 300m long.

The last fork of the main North route is 2.7 km after Aldinova mogila. One of the branches continues to the East for 500m before turning right and ascending 800m until it reaches Gonova mogila (CDFig.15). The other branch heads due South for 800m before ascending to the East for 300m, where it reaches Ovcharitsa I (CDFig.46).

The visibility from the last four paths is one and the same in both landscape and site terms up to the point of the Ovchartsi barrow (CDFig.16), (CDFig.47), (CDFig.48), (CDFig.49)– very good along the valley and with scattered strips and spots to the South East of the path. All but three of all sites in the North part of the study region are located in the visible areas. It is likely that the three sites were also visible, since in the case of the Tcherniova and Taniokoleva barrows, one out of four possible locations are visible from the paths, while Barrow IV is close to the edge of a visible /invisible cell.

There are differences in the landscape and site visibility of the last paths due to the particular location of the sites and the segments of the North route that lead to each of them. The differences concern only the Northeasternmost part of the study area and follow a pattern in which the Southwesternmost site (Ovcharitsa II) (CDFig.47) has the least visibility, while the Northeasternmost site (Gonova mogila) has the best visibility (CDFig.16).

Aldinova and Gonova barrows and Ovcharitsa II are contemporary sites, (dating to the EBA1-2 phase, and from the paths to each of them the other two sites are visible. There is only one exception – Gonova mogila cannot be seen from the path to Ovcharitsa II but instead Polski Gradets pit site is visible (CDFig.47). Most probably, parts of the same site were also visible from the path to Gonova mogila (CDFig.16). Ovcharitsa I is the latest site in the Northeasternmost part of the study region and, from its side-path, all the three earlier sites are visible (CDFig.49).

Atanasivanova mogila

The path from this barrow to Mednikarovo follows the valley for 800m to the West, then turns South South West for 2 km before ascending South East for less than 1 km (CDFig.69). The visibility from this route is very good over the areas along the path – up to 3 km - and towards the North part of the Sokolitsa valley (CDFig.70). The Iskritsa pit site and Gudgova tell are also visible.

An interesting pattern is observed for the routes to the MIBC. One main route is followed to barrows 1,2 and 4, (CDFig.71), (CDFig.72), (CDFig.73) which bifurcates to three paths some meters before the immediate access to each barrow. The general visibility from the routes is good over the valley and the hills to the South and patchy towards the North part of the valley. The panorama becomes denser in the last two viewsheds for the paths to MIBC2 and 4 (CDFig.74), (CDFig.75). All the sites in the Eastern part of the valley are visible from the path but it is very interesting that the final segments after the bifurcation has a crucial impact on intervisibility between the barrows of the cemetery (CDFig.76). The first segment that leads to MIBC1 has no visibility over the other three barrows of the cemetery. The second segment to MIBC2 that is 350m long in a Northeasterly direction provides the visibility over barrows 1 and 3. The last segment that leads to MIBC4 and continues North of the previous segment has the best visibility, as all four barrows can be seen. The route from Atanasivanova mogila to MIBC3 follows a different track that, in general, is parallel to the path to the other three barrows (CDFig.77). The availability of this second route means that, if a special journey was intended to barrow 3, related to some common/communal pilgrimage activity (e. g. a family memorial rite for a person buried in barrow 3), there was an opportunity for direct access to this particular barrow. It is interesting to point out that, in comparison with the visibility from the path to the other three barrows, Gudgova mogila is not visible (CDFig.78). The partial intervisibility between the barrows is also confirmed, as only MIBC2 and 4 are visible from the path.

The route to Kurdova mogila ascends to the North for 2.7 km and then follows the ridge of the hill to the North West for 3.5 km (CDFig.79). The hilly central area along the path and the hills in the Eastern path of the study area and South of the Sokolitsa valley are seen from the path (CDFig.80). The valley is also visible, hence all the sites along the Sokolitsa as well. The scattered visible spot to the North of the valley assures the view over MIBC1 and 2. Another four barrows located in the Northern part of the study area are also visible.

The route to Manchova and Taniokoleva mogila follows one and the same track for 6.5 km. It starts Eastwards, following the valley for 1.5 km, then turns Northwards, ascending for 2.8 km and finally descends for another 2.5 km. At that point, the route bifurcates, with the West wing descending to the North and North East for 2.2 km until it reaches Taniokoleva mogila, in its path passing the all four possible locations of the barrow (CDFig.81). The East wing descends and ascends again for total of 3.1km to the North East up to Manchova mogila (CDFig.82). The visibility from the two paths is similar – good over the Sokolitsa valley and the hills in the Eastern part of the region and South of the valley. There is a consistent strip-like visibility over the central part of the study area and a patchy view to the Northern parts of the region. The visibility from the path to/from Manchova mogila assures better visibility over the Northern study area (CDFig.83). All the sites in the Sokolitsa valley - MIBC2, Polski Gradets tell, five barrows and the Goliama Detelina site - are visible from the paths. The only difference is that Goliamata mogila is not visible from the path to Taniokoleva mogila (CDFig.84).

The last path to be discussed here is to Barrow 4 (CDFig.85). It forks from the path to Manchova and Taniokoleva mogila 2.4 km after Atanasivanova mogila, ascends for 2.5 km to the North/North East, descends and ascends again for 1.4 km to the North East and finally follows the ridge of the hill to the North West for 3 km. The visibility pattern from the path is patchy and scattered across the central, Eastern and Northern parts of the study area (CDFig.86). It is interesting to point out that, despite the lack of consistent landscape view, there is a very high site visibility – six or seven (Aldinova is on the edge visible/invisible area) barrows, two tells and two flat sites. The visibility pattern of Atanasivanova mogila - Barrow 4 path will be discussed below (see p. 206).

The paths to both Iskritsa sites are discussed in section 5.6.2 because of the specific visibility status of the Iskritsa dwelling site.

The path to Klisselika tell is a part of the main South route and shares the visibility Galabovo tell - Klisselika tell from the location of Atanasivanova mogila Eastwards.

Mednikarovo

Two of the paths that cross the study area from South to North (from Mednikarovo tell to Barrow 4 and to Taniokoleva mogila) have the same tracks as the paths from Atanasivanova mogila. Therefore, they share the same site visibility and very similar landscape visibility (the viewsheds from Mednikarovo are more consistent around the tell itself) (CDFig.93), (CDFig.94).

The only difference between the Atanasivanova mogila logistical network and the Mednikarovo tell logistical network lies in the paths to MIBC and Kurdova mogila, as well as the path to Manchova mogila (CDFig.95), which does not cross the study region but follows the main valley routes.

When the path from Mednikarovo tell reaches the Sokolitsa valley, it bifurcates, one branch joining the main South route, the other heading North towards Kurdova mogila. The former splits from the main route after 600m and ascends to the North East for 2.3 – 3 km to the different barrows of MIBC (CDFig.96), (CDFig.97), (CDFig.98), (CDFig.99). The four tracks and their visibility are very similar. There is very good visibility over the Southern part of the Sokolitsa valley and the hilly areas to the South. The view over the North parts of the valley and the Eastern hills is patchy. There is a consistent panorama to the East of the paths. All the sites in the valley are visible from the paths.

The only difference lies in the number of visible barrows from the cemetery itself when it is approached from the South East. From the path to MIBC1 (CDFig.100), only this barrow is visible; continuing to the East toward MIBC2 (CDFig.101) – apart from the already passed barrow 1-MIBC3 is also visible. The paths to MIBC3 (CDFig.102) and 4 (CDFig.103) – 300m North of MIBC2 - assure full intervisibility between the barrows in the cemetery. A similar pattern of visibility while approaching the MIBC was observed in the previous case study as well. Final comments on the patterns are going to be made in Chapter 8.

The path to Kurdova mogila ascends to the North for 2.5 km, turns right for 1.1 km and then follows the hill ridge North West for 2.7 km (CDFig.104). There is a consistent view from 1 - 5 km East and West of the path (CDFig.105). The panorama over the North part of the Sokolitsa valley is good, as well as towards the hilly areas South of the valley. Scattered spots and strips are visible in the central, Eastern and Northern parts of the study area. Most of the sites in the Sokolitsa valley are visible from the path, as well as six barrows (surely five and one (Taniokoleva) with two out of four possible locations) and Polski Gradets tell.

KMBC

The KMBC logistical network has one new path – to Mednikarovo tell - and two paths with minor differences from the Atanasivanova mogila logistical network – the path to Atanasivanova mogila itself and the path to both Iskritsa sites.

The path to Mednikarovo is not entirely new, since it appeared in the Mednikarovo logistical network but should be discussed here because its possible use may have started after the emergence of the KMBC during the LBA.

The path follows the ridge of the hill to the North West for one km and then turns left, descending to the West for 1.1 km (CDFig.114). The areas North of the Sokolitsa valley are visible from the path, as well as the region South of the path itself. Atanasivanova mogila, MIBC2 and Iskritsa pit site are visible from the path (CDFig.115). It is important to point out that the possible paths to the sites situated in the same North West direction (Obrutchishte and Galabovo) do not pass by Mednikarovo tell but rather use the main South route. It is a confirmation of previously discussed advantages of GIS, in which the presumed least-distance routes are not as effective as the least-cost routes. It is also worth noting that least cost is not only an economical category but also has meaning in terms of bodily experience- e.g. a pilgrimage in which the load should not be broken or spilt; or on a matchmaking trip, the participants should stay in proper/ specific condition.

Such an absence of a chain of sites along one and the same route is confirmed by the path to Atanasivanova mogila. Although the mud volcano is situated 300m from the main South route, there is no branch from it that leads to the site. Rather there is a separate path from KMBC to Atanasivanova mogila, although it runs parallel to the path leading to the Sokolitsa valley (and the main South route) (CDFig.116). There is only one path from KMBC that descends due South and then bifurcates after 1.6 km. The left branch is for Atanasivanova mogila, and it continues to descend to the North West for another 1.6.km, the straight branch leads to the main South route, while the right branch descends to the North East for 1.2 km until it reaches the Iskritsa pit site (CDFig.117). The latter is the last minor difference in the track network from the Atanasivanova network.

The segment to the Iskritsa dwelling site forks from the path to the Iskritsa pit site 500 before its destination and heads North East for 500m (CDFig.118). The landscape visibility from the paths to Atanasivanova mogila (CDFig.119) and both Iskritsa sites is very similar (CDFig.120), (CDFig.121) – a good panorama over the Sokolitsa valley and its Northern areas and scattered visible area towards the hilly Southern regions. The view from the paths to both Iskritsa sites is slightly better towards the Eastern parts of the valley that assures better site visibility. Only MIBC2 and the Iskritsa pit site could be seen from the path to Atanasivanova mogila, while all the sites in the valley plus MIBC2 are visible from the paths to both Iskritsa sites. It is important to point out that the nearby Mednikarovo is not visible at all: even more – the site is in the middle of an "invisible island" area.

The specific visibility status of Iskritsa is confirmed in the KMBC viewshed analyses. These results contribute to the visual restrictions of the site - this time from the West. General comments on the Iskritsa visibility are made in section 5.6.2.

The only track and its visibility that has not been discussed in any of the previous case study is KMBC - Galabovo tell. The path is, in fact, a combination of the segment that goes from the cemetery to the valley and the main South route following the East - West direction (CDFig.122). The panorama from this track is relatively good as, apart from the whole valley and the sites in it (apart from the Iskritsa dwelling site), some spots South and North of the plain are also seen (CDFig.123).

Iskritsa

The path from the Iskritsa sites to Polski Gradets tell goes Eastwards along the main South route for 3.2 km, then turns to the left crossing (ascending and descending) the hilly area Northwards for 6.9 km following the gentlest sloping hills and finally ascending and descending to the East North East for five more km (CDFig.133). The visibility from the path is very good over the hills in the Eastern part of the study region and to the South over the foothills of the Sakar mountain (CDFig.134). The view over the Sokolitsa valley is patchy, as well as over the areas West of the path. There is consistent visibility to the Northernmost and North Western parts of the study region. If the path was initially used during the Copper Age, all the earlier and contemporary sites in Sokolitsa valley were visible from the path. However, seven Bronze Age barrows were also visible from the path. It is likely that, while walking along and across the landscape, the people have noticed visible places in the landscape, which were later used for the location of sites whose visual aspect was crucial.

Gudgova mogila

There are six paths that connect the tell with the sites located North of the Sokolitsa valley. Starting from East to West, the first of these paths leads to the Polski Gradets pit site (CDFig.155). The track of the path matches the Neolithic/Chalcolithic route from the Sokolitsa valley to Polski Gradets tell, with an additional segment of 2 km to the North East. This is important evidence for the possibility of the re-use of earlier routes during the Bronze Age, which, in its turn, justifies the choice of the location of the seven sites (Aldinova mogila is re-placed by Ovcharitsa II) visible from the route (CDFig.156). The contrast is that, during the Neolithic and Chalcolithic, they were visible places, while, during the Bronze Age, they were visible sites.

Roughly 10 km before reaching the Polski Gradets site, the path bifurcates and the new branch ascends to the North West towards Goliamata (CDFig.157) and Malkata mogila (CDFig.158) and Barrow 4 (CDFig.159). After 2 km, the path joins the route from/to the Iskritsa dwelling zone to/from these three barrows. The visibility from the paths is very similar (CDFig.160), (CDFig.161) – good over the Eastern part of Sokolitsa valley, the hills in the East part of the study area and the Northern parts of Ovcharitsa valley. There are visible spots or strip- like visibility over the central and Western parts of Sokolitsa valley and over the hills in the central part of the study area. The path to Barrow 4 has lower visibility towards the Ovcharitsa valley (CDFig.162).

The other two almost fully matching paths from the Iskritsa dwelling site network are the routes to Manchova (CDFig.163) and Kurdova barrows (CDFig.164). The only difference is in the initial segment of the route, which forks from the main South route 1 km East of Iskritsa and ascends for 3 km to the North North West. The visibility from the path is very good over the Sokolitsa valley and the hills at the Eastern and the Southern parts of the study area and strip-like over the hills in the central part of the region (CDFig.165). The path to Manchova mogila has a better view towards the Ovcharitsa valley (CDFig.166).

The point where the path to Kurdova and Manchova mogila branches from the main South route is the point of bifurcation for the path to Taniokoleva mogila (CDFig.167). It ascends to the North North West for 3 km and then descends for 4.2 km to the North West, passing by the all four possible locations of the barrow. The visibility from the path (CDFig.168) is very similar to the visibility from the path to Kurdova mogila but the more Eastern location of Taniokoleva mogila assures better visibility towards the Western hills of the central study area, while, from the path to Kurdova mogila, the Eastern areas are visible.

The last two paths from East to West are the tracks to MIBC. There is one path that starts from the above-discussed point (to the three barrows) and leads to MIBC2-4 (CDFig.169), (CDFig.170), (CDFig.171). It ascends for 1.1 km to the North West, then 800m to the North when it divides into 3 segments that lead to each of the barrows. The visibility from the path is very good over the Eastern part of Sokolitsa valley and the hills to the South of it (CDFig.172). The segment to MIBC2 adds some visible spots towards the Central and Eastern hills of the study area (CDFig.173).

The path to MIBC1 splits from the main route North of Iskritsa and ascend for 2.3 km to the North West until it reaches the barrow (CDFig.174). The visibility from the path is similar to the visibility from the paths to MIBC3and 4 but less consistent over the Southern hills (CDFig.175).

The last track to be discussed is the path to Polski Gradets tell (CDFig.176). It starts due North of the tell, ascending for 1.5 km, then continuing to ascend to the North North East for 3.5 km and finally descending Northwards for 2.5 km. The visibility from the path is mainly toward the Sokolitsa valley and the area to the South, as well as over the Eastern part of the study area (CDFig.177). There are some visible strips over the central hills and gullies and the Northern parts of the Ovcharitsa valley.

It is interesting to point out that the adjacent Klisselika and Gudgova tells do not share a common track to Polski Gradets tell. This is important evidence for availability of alternative routes, which means that, if the aim of the journey between Polski Gradets and the area North of the present village of Mudrets was not based on least-cost access, there was an opportunity to use the other route.
The last issue to be discussed in the Gudgova tell GIS analyses is the visibility from the tell to Galabovo tell. This is the main South route discussed in several GIS sections and in many details of its track and visibility on the Galabovo case study. The following comments are on the visibility of the main South route if the direction of movement was from East to West.

The first segment of the route between Gudgova and Klisselika tells (CDFig.178) assures good visibility over the area around the two sites. There is also a patchy view over the Northern parts of the Sokolitsa valley and consistent visible spot 8.5 km to the West near the Obrutchishte site (CDFig.179). Both Iskritsa sites and MIBC2 are visible from this little segment.

The path to the Iskritsa sites extends the view to the East and assures a very good panorama over the Sokolitsa valley and the foothills of the Sakar mountain (CDFig.180). The segment to the Iskritsa pit site provides better visibility to the East of the valley in comparison to the path to the Iskritsa dwelling site (CDFig.181). All the sites in the valley plus MIBC2 are visible from the paths.

The visibility to the next site – Atanasivanova mogila - adds some newly visible areas that make the view denser but the panorama over the valley and the sites is generally the same as in the case of Iskritsa (CDFig.182).

In addition, the path to Mednikarovo provides a good view over the foothills of Sakar to the South of Klisselika tell, as well as over the areas South of the Sokolitsa valley around Mednikarovo (CDFig.183). Again, all the sites in the Sokolitsa valley are visible.

The last segment of the main South route before the destination of the Galabovo tell - to Obrutchishte site - assures good visibility further East along the valley, as well as to the South of the valley over the foothills of Sakar (CDFig.184). Galabovo tell is already visible from this path.

Polski Gradets tell

The change of direction of movement from East to West causes two main differences between the logistical networks discussed so far and the Polski Gradets logistical network. The first difference is in the path to Aldinova mogila (CDFig.193) - the segment from Polski Gradets tell to the main North route differs from the segment that leads to the tell if the movement was from the West (e.g. Galabovo tell). Once the main North route is reached, the paths follow a common segment to Aldinova barrow. The second difference is in the segment towards the Goliamata and Malkata barrows. The branch that diverges from the main North route 8 km from Polski Gradets bifurcates after 300m, with the East segment leading to Barrow 4, and the West segment to Goliamata and Malkata barrows (CDFig.194). The latter climbs the hills with the least slope to the South West until the barrows are reached.

There is one more difference in the path to Ovcharitsa II, which starts from Polski Gradets tell due North, descending and ascending for a total of 4 km (CDFig.195). It is noteworthy that the paths to the neighbouring Ovcharitsa I and Gonova barrow (CDFig.196) do not climb the steeper hill to the North East but follow the main North route in the valley of the Ovcharitsa.

The main difference in the South route consists in the approach to each individual site. So far the access has been chain-like, from East to West or from West to East. The pattern from Polski Gradets tell is different, where the main traffic is from North to South. The Sokolitsa valley (respectively the main South route) is approachable by three main paths. The route across the study region from Polski Gradets to Klisselika tell bifurcates when the Sokolitsa valley is reached, with the left wing leading to Klisselika tell, while the right wing leads to the Iskritsa sites. Both paths were discussed in previous sections – the only difference here is that the movement was in the reverse direction.

The other three sites in the Southern part of the valley – Mednikarovo, Atanasivanova mogila and KMBC - are to be reached while following the main North route, crossing the study area over the contemporary mining area (a path already discussed in previous case studies when the region was crossed from South to North) and, once in the valley, every segment to the site is the same as described in each of the three individual logistics network. The last route that crosses the study region is the one from Polski Gradets tell to Gudgova tell (see above, p. 202).

The track to the MIBC starts from the path Polski Gradets tell – Klisselika tell. Since the latter and Polski Gradets tell appeared to be contemporary, comments on this particular path are noteworthy. The route follows the least steep hills throughout the whole journey. It starts to the North of the tell, then descends left to the West South West and after 4.3 km climbs up again to the South for 4.8 km; then turns left to the West, following the ridges of the hills for 3.6km, when it bifurcates, with the Northern segment leading to barrows 3 and 4 (CDFig.197), (CDFig.198), the Southern segment to barrows 1and 2 (CDFig.199), (CDFig.200).
Viewshed analyses were performed only for paths that are new in the discussed logistics networks or that have not been discussed earlier.

The visibility from the paths to MIBC3 and 4 (CDFig.201), (CDFig.202) is almost identical – a good view over the hilly areas in the Southern and Eastern parts of the study area, as well as to the Northern parts of the Ovcharitsa valley. There are also visible strip-like views over the hills and the gullies in the central part of the region. The path to MIBC1 (CDFig.203) adds to this general panorama a few more visible areas along the Sokolitsa valley and in the central part of the study area. The path to MIBC2 (CDFig.204) provides some additional visible areas along the Sokolitsa valley, which assure the visibility over the Iskritsa pit site and Klisselika tell. The path to MIBC2 has a view towards Ovchartsi barrow, as well. All the paths share a common visibility over the seven barrows located in the Northern part of the study area.

The specific pattern of barrow intervisibility when approached from the South is valid here as well. From the paths to MIBC3 and 4 – barrow 1 is not visible; the path to barrow 2 lacks a panorama over MIBC4 and 1, and finally, from the path to MIBC1, barrow 4 cannot be seen.

The visibility from the route to Ovcharitsa II is mainly along the path – 1.3 km to West and 2.6 km to the East (CDFig.205). The areas South of the tell and some Northern parts of the Ovcharitsa valley are also visible. Five barrows (surely four and one with one out of four possible locations) and one flat site could be seen from the path.

The route to Aldinova mogila has a very good view over the North Eastern parts of the study area and the Northern parts of the Ovcharitsa valley (CDFig.206). There are also some strip-like views towards the central part of the region. Despite the patchy visibility to the East of the path, two sites contemporary with the path could be seen. Another five barrows (surely four and one with two out of four

possible locations) and one enclosure are visible from the path, as well.

Polski Gradets pit site

The logistical network derived from the cost surface is similar to the previously discussed network for the Polski Gradets tell, with two important differences (CDFig.213). First, there is no separate route to Gudgova tell. In order to reach the tell, one should follow the route to the Sokolitsa valley and then via Klisselika tell to approach Gudgova tell from the East (CDFig.214). Secondly, there are two routes to the Western and Eastern edges of the Iskritsa flat site. The "dwelling" site is to be reached from the East via the route to the Sokolitsa valley (CDFig.215) (described in the previous case study as the route to Klisselika tell and the Iskritsa sites), while the Western part of the site is approached from the West via Atanasivanova mogila (CDFig.216) (the detailed track description is given in the previous case study). Thus, there is a possibility for a round trip between two sites, in which the onward and return trips cross the region following different tracks. There is no evidence that the Iskritsa sites and Polski Gradets pit site were contemporary. The reason for the detailed discuss on this particular pattern is because it confirms the possibility for "alternative" routes observed in another case study (see p.136). Indirect confirmation for the alternative pattern is the lack of a special route between the contemporary Polski Gradets pit site and Gudgova tell. The onward journey may have been through the path shown in CDFig.214 and derived from the Polski Gradets pit site cost surface. The return journey, however, may have been via Polski Gradets tell, following the path not shown on CDFig.214 but which exited between the Polski Gradets and Gudgova tell as the previous case study cost surface analysis has confirmed.

There are minor differences from the logistics network of the Polski Gradets tell in the paths towards the sites in the North part of the study region. The main North route is used to connect the Polski Gradets pit site with the sites in the Western part of the study area, while there are four different paths to the sites North of the Polski Gradets pit site.

The route from the Polski Gradets pit site to Ovcharitsa II starts in a North North Easterly direction and then descends to the North West, following the least steep slopes of the hills (CDFig.217). From the path, there is very good visibility over the Western and North Western parts of the study region and the Northern part of the valley of the Ovcharitsa (CDFig.218). There is an invisible spot North of Ovcharitsa II and consistent invisible areas to the East, West and North of Ovcharitsa I and Gonova barrow. Four barrows (surely three and one with one out of four possible locations) and one flat site are visible from the path.

The Polski Gradets pit site – Ovcharitsa I site path follows the same track for 2km and then turns right to the North East, descending into a small gully for 800m and finally climbs up for 200m to the site (CDFig.219). The path follows the least steep slopes in this generally steep area. There is a good general visibility over the Northeasternmost part of the study area but the consistency of the view is interrupted by a totally invisible central part of this Northeasternmost area (CDFig.220). The view over the Northern part of the valley of the Ovcharitsa is patchy. Ovcharitsa II, Gonova barrow and one of the possible locations of Tcherniova mogila are visible from this path.

The same visibility occurs from the route to Gonova barrow, as only a 500m-long segment is needed to reach the site from Ovcharitsa I (CDFig.221). Therefore, it shares the same general visibility but it is better over the previously invisible middle part (CDFig.222). This is due to the higher location of the barrow. All of the remaining three sites in the Northern part of the study region – Ovcharitsa I and II and Aldinova barrow - are visible from the path, together with one of the possible locations of Tcherniova mogila.

The route from Polski Gradets pit site to Aldinova barrow takes a different direction, which initially descends into the valley to the North West and then climbs up again for the last few hundred meters following the least steep slopes (CDFig.223). Only the Northeasternmost part of the study region is visible (CDFig.224). The panorama from the path over that area is generally good but there is almost totally invisible strip around the sites of Ovcharitsa I and Gonova mogila. The Gonova mogila is visible, however, as it is on a hill. The other visible sites are the Ovchartsi barrow and Ovcharitsa II.

The last path to be discussed is Polski Gradets pit site - Polski Gradets tell (CDFig.225). It winds round the highest hill in the study area, initially descending and ascending to the South West for 1.1km and then following the ridge of the hill to the South for another 1.1 km. The visibility from this path is mainly over the hilly areas in the Eastern part of the study area (CDFig.226). There are scattered visible spots toward the central, North West and Northern parts of the study area. Three barrows (surely two and one with one out of four possible location) and one flat site are visible from the path.

Gonova mogila

The main North route connects Gonova mogila with Galabovo tell and the track derived from both cost surface analyses is one and the same. The visibility from the path is

also the same in general, but differs significantly in its sequence because of the change of direction. The stages of this sequence are formed by the viewsheds to each of the sites along the valley of the Ovcharitsa. They have been summarized for the West-East direction of movement in the Galabovo case study. Here they are summarized as if the traffic was from East to West.

The North route starts with very good general visibility over the Northeasternmost part of the study area (CDFig.235), (CDFig.236). There are invisible areas South of Ovcharitsa II and South/South East of Gonova mogila, while, further South, there are visible spots over the hills between the two Polski Gradets sites. Heading to Ovchartsi barrow, a very good panorama up to 4 km to the West of the site is revealed over the valley of Ovcharitsa, that turns into a patchy view after the 4km point. Also patchy is the view over the hills and the gullies from 1.5 up to 10km to the South East of Ovchartsi barrow (CDFig.237). Aldinova mogila, Ovcharitsa I and II are visible from all the paths to the Western sites along the Ovcharitsa valley. From the path to Ovchartsi barrow, three more barrows are visible. Moving Westwards, there is a gradual increase in the visibility over the North part of the Ovcharitsa valley. The view to the South part of Ovcharitsa valley depends on the location of the destination site. The best panorama over the Ovcharitsa valley is from the path to Galabovo, which is the same as discussed in Galabovo case study (see above, p. 197 - 199). There are minor variations in the views over the North part of the valley and the hills between the two Polski Gradets sites, depending on the actual location of the each site and the segment to it from the main North route. Thus, for example, the tell Polski Gradets is visible only from the paths to Goliamata (CDFig.238), Malkata (CDFig.239), Tcherniova (CDFig.240) and Kurdova (CDFig.241) barrows due to the variable views over the hilly area. More substantial are the differences in the viewsheds to the areas South East of the main North route. For instance, the path to Ovchartsi barrow (the site is located exactly on the North route) has better visibility over the South East areas than the path to barrow 4, which is generally located to the South East of the main North route. This is maybe due to the topographic particularities of the terrain that restricts the visibility of barrow 4 (standing hills) and aids visibility from Ovchartsi, which is located on a high hill. The areas South East of the path and the central parts of the study area are not visible from the paths to Goliamata and Malkata barrows, but are visible from the paths to Goliama Detelina site (CDFig.242), Manchova (CDFig.243), Kurdova and Taniokoleva barrows (CDFig.244). The general visibility to the South East from all the paths is patchy.

The paths to the Polski Gradets sites are the same as the reverse ones derived from the cost surface analyses of each of the sites. This is to confirm that, although deriving from different cost surfaces, the path had one and the same track in both directions due to the landscape particularities. The last segment of the route Polski Gradets pit site – Gonova mogila (or the first one if the direction was from Gonova mogila) is the route to Ovcharitsa I (CDFig.245) - the site with the easiest and straight access. If there was any movement between Ovcharitsa I and Gonova mogila, it happened during the LBA, when Ovcharitsa I was founded. The visibility from this 500m-long path is good over the Northeasternmost part of the study area and patchy around the two sites - no more than 1km to the South, West and East (CDFig.246). There are also visible strips over the hills East and South of the Polski Gradets pit site and over the Northwesternmost area of the study region. Only Aldinova mogila is visible from the path.

The main North route is used to reach Aldinova mogila (CDFig.247), as well as Ovcharitsa II. The last segment to Ovcharitsa II is different because of the Eastwards direction of movement (CDFig.248). The visibility from the path is very good over the Northeasternmost part of the study region. There are visible spots to the South and SouthWest of Gonova mogila and to the South of Ovcharitsa I. The panorama over the North part of the Ovcharitsa valley is patchy (CDFig.235). Two barrows – Ovchartsi and Aldinova, Polski Gradets pit site and Ovcharitsa I are visible from the path.

The same difference because of the direction of the last segment is also valid for the path to Goliamata (CDFig.249) and Malkata mogila (CDFig.250), previously discussed in the Polski Gradets tell case study (see above, p. 203).

There are two new tracks that connect Gonova mogila with Kurdova mogila (CDFig.251) and MIBC. One of them has appeared in a previous logistical network – the path to Kurdova mogila is the same as the path to the barrow from Polski Gradets tell. The other is the route to MIBC, which generally matches the path from MIBC to Taniokoleva mogila, except that the latter is from South to North and does not reach the main North route. Since it appears here for the first time, the track is going to be discussed in the next paragraph, rather than in the relevant case study.

The path Gonova- Kurdova mogila follows the main North route to the West and turns left at the major cross-road of the main North route – the starting-point for the paths to Tcherniova, Manchova and Taniokoleva barrows and Goliama Detelina flat site. The path ascends, winding to the South West, South and South East for a total of 3km. From the path, there is a good visibility over the Northeasternmost part of the study region - the Northern Ovcharitsa valley -, as well as over the hills in the Eastern part of the study area. The panorama over the central part of the study region is consistent but strip-like (CDFig.241).

All but two from the sites located in the Northern part of the study area are visible from the path.

The path to MIBC starts for the same major crossroad on the main North route and may have been in use during the EBA2. The path ascends to the South East and has two right branches to Manchova and Taniokoleva barrows and one left branch to Goliama Detelina flat site (CDFig.234). Roughly 3 km after the split from the main route, the path turns right and 300m later reaches the path MIBC – Taniokoleva mogila (CDFig.252), (CDFig.253), (CDFig.254), (CDFig.255). The general panorama from the paths to MIBC is very good over the Northeasternmost part and the hills in the Eastern part of the study region. While following the main North route, there is very good visibility over the valley and patchy views to the North. A patchy strip-like view is had over the central part of the study area and maybe it is not a coincidence that the sites in the area are located at the few visible spots (CDFig.256), (CDFig.257). There are single visible spots to the Southernmost part of the study area. Ten barrows, three BA sites and Polski Gradets tell are visible from the paths. There is some difference in the intervisibility between the barrows. MIBC1 is not visible from the paths to the other three barrows, while, from the path to barrow 1, all MIBC barrows are visible (CDFig.258). The more Easterly location of MIBC2 is probably the reason for the better visibility from the path to this particular barrow (CDFig.259). It shares the panorama discussed above but, in addition, there is very good visibility over the South part of Sokolitsa valley and the Sakar foothills. Two more sites are visible from this path – the Iskritsa "pit-site" and Klisselika tell.

Barrow Four

The routes to the Southern part of the study region have already appeared in the logistical network of both the Iskritsa sites, Atanasivanova mogila and Klisselika tell but, since Barrow 4 is later than, or contemporary with, these sites, their use may have started at the beginning of the Bronze Age. If the movement was from North to South, there was one main route, which starts from Barrow 4 and follows the ridge of the hill for 3.3 km to the South East. At this point, the path splits into two and the West branch heads towards MIBC and the sites in the Western part of the Sokolitsa valley, while the Eastern branch leads to Klisselika and Gudgova tells.

The Western branch descends for 1km to the South West, where it connects to the first branch to MIBC3 (CDFig.305) and MIBC4 (CDFig.306). The path starts to ascend again and 900m to the South is the second branch to MIBC1 (CDFig.307) and MIBC2 (CDFig.308). The last 900m of this segment match the route to barrows 1 and 2 from Polski Gradets tell. From the intersection with the second branch, the route starts to descend for 1 km due South, when it heads South West and South again until it reaches the main South route. The routes between the sites in the South Western part of the study region are discussed in the Iskritsa case study.

The visibility from the path to barrow 3 and 4 of the MIBC is mainly over the central and Eastern parts of the study area (CDFig.309), (CDFig.310). There are also some visible spots over the foothills of the Sakar Mountain, as well as over the Northern and North Eastern parts of the study area. Six barrows (one is barrow 2 from the same cemetery), the EBA enclosure and Polski Gradets tell are visible from the path. The panorama from the path to barrows 1 and 2 is generally the same but improves significantly over the Southern parts of the Sokolitsa valley (CDFig.311), (CDFig.312). The same sites are visible and it is interesting to point out that, despite the increased visibility over the Southern parts of the study area, just two more sites are visible (the Iskritsa pit site and the Klisselika tell), but only from the path to MIBC2. The pattern of different inter-site visibility along the approach to MIBC is confirmed here as well. From the path to barrow 2, only MIBC 3 is visible, while the path to MIBC 1 has views over barrows 2 and 3.

The visibility from the extension of the West branch towards Mednikarovo tell (CDFig.93) (which includes the visibility of the sites located along the segment – both the Iskritsa sites and Atanasivanova mogila) and KMBC is generally the same, but with minor differences. The panorama is patchy and scattered across the central, Eastern and Northern part of the study area. Six barrows, all the sites in the Sokolitsa valley (Klisselika tell is on the edge of visible/invisible area), the Ovcharitsa II enclosure and Polski Gradets tell were visible from the path.

The Eastern branch is the route to Klisselika (CDFig.314) and Gudgova tells, most of which coincides with the path from Polski Gradets tell to Klisselika. It ascends to the South East and then descends to the South and, upon reaching the Sokolitsa valley, it turns left to the two tells. A viewshed analysis from the path Barrow 4 – Gudgova tell was performed in order to characterize the visibility for most of the route already discussed between Polski Gradets tell – Klisselika tell (CDFig.162). The view from the path is patchy to the Northeasternmost and the central parts of the study area; good over the Eastern hills and the Sokolitsa valley, where the actual path is passing, and patchy over the rest of the valley and the foothills of Sakar. There is also a consistent visible spot over the Northern part of the Ovcharitsa valley. All the sites in the Sokolitsa valley - five barrows, the EBA enclosure and Polski Gradets tell - are visible from the path.

The new routes to Taniokoleva, Goliamata, Malkata and Kurdova barrows also follow the main path to the South for 600m, when it turns right and bifurcates after 400m. The North West path descends for 1.4km until it reaches Goliamata and Malkata mogila (CDFigs.315-16). The West/South West path descends and ascends for 1.8 km when it reaches Taniokoleva mogila (CDFig.317). A further 1.8 km to the South West is needed from the branch to Taniokoleva mogila to the final site on the path – Kurdova mogila (CDFig.318). The last segment ascends and descends low ridges several times, which is the reason for the relatively high cost distance between the two barrows.

The view from the first path is good over the valley of the Ovcharitsa and its Northern part and patchy over the Northeasternmost, central and Eastern parts of the study area (CDFigs.319). Five barrows, the EBA enclosure and Polski Gradets tell are visible from the path. The panorama from the second path is patchy over the valley of the Ovcharitsa and its Northern part, as well as over the Northeasternmost parts of the study area (CDFig.320). There is good visibility over the hills and the gullies in the central and Eastern parts of the study area. Six barrows, one EBA settlement, the EBA enclosure and Polski Gradets tell are visible from the path. The view from the last segment of the route is similar to the panorama from Taniokoleva mogila but patchier in the central part of the study area. Five barrows, the EBA enclosure and Polski Gradets tell are visible from the path (CDFig.321).

Goliamata mogila

The logistical network of this barrow is similar to the Gonova mogila network, except for the segments to some of the sites in the Northern part of the study area (CDFig.328).

The paths to Klisselika (CDFig.329) and Gudgova tells and Iskritsa sites (CDFig.330) that cross the study area differ from the Gonova mogila network (CDFig.324) but resemble the Barrow 4 network (CDFig.304). The route to the MIBC ascends and descends for 2.2km in a winding pattern with a predominantly Southern direction, where it joins the path to the cemetery that starts from Gonova mogila (CDFig.331), (CDFig.332), (CDFig.333), (CDFigs.334). A viewshed to MIBC 2 was performed to justify the visibility from Gonova mogila (CDFig.335). The general visibility pattern over the study region was confirmed. The difference between the two viewsheds was better visibility over the Northeasternmost part (in the Gonova case) and better visibility over the central part (in the Goliamata mogila case).

The different segments to the Northern sites in a West-to-East direction were discussed in the Galabovo case study. There are four new segments – to Taniokoleva, Manchova and Kurdova barrows and to the Goliama Detelina settlement. The path to the first barrow descends to the South West for 1.2km and then ascends for 800m (CDFig.336). There is a good visibility over the Ovcharitsa valley, along the path itself and towards a gully between two hills in the central part of the study area (CDFig.337). There is a patchy view over the Northeasternmost part and the Eastern hills of the study area. Six barrows, one flat site and a tell are visible from the path.

The path to Manchova barrow descends to the West/South West for 1.5km and ascends for 500m (CDFig.338). The visibility from the path generally follows the same pattern as from the previous path but it is better over the valley of the Ovcharitsa and the central part of the study area (CDFig.339). The same sites are visible as well (only Manchova mogila is replaced by Tanoikoleva mogila).

The path to the last barrow takes the same West/South West direction but between the other two paths (CDFig.340). It ascends and descends low ridges for 3.5 km until it reaches Kurdova mogila. The panorama from the path is similar to the view from the path to Taniokoleva mogila but with more visible areas in the central part of the study area (CDFig.341). The same sites are visible again, apart from the flat site of Goliama Detelina.

The path to Goliama Detelina descends Westwards for 1.5km (CDFig.342) and has a good view over the Ovcharitsa valley. There are patchy visible strips over the central, Eastern and Northeasternmost parts of the study area (CDFig.343). The same sites are visible again.

In summary, the three paths have different but similar patterns of landscape visibility but one and the same inter-site visibility – 6 barrows and two settlements. It is important to point out that these same sites were also visible from the Barrow 4 logistical network.

Goliama Detelina flat settlement

In order to check the inter-site visibility pattern observed along the paths from Goliamata mogila to some of its neighbouring sites (see above), viewshed analyses were performed for the paths to the same sites.

The path from this settlement to Tcherniova mogila is crossing the Ovcharitsa valley for 1.8km (CDFig.361); here, there is good visibility over the valley to the East (up to 4.5km) and to the West (up to 5.3km) of the path (CDFig.362). There are scattered visible spots in the Eastern and North Eastern parts of the study area, as well as a strip to the South/South East over a gully and a hill in the

central part of the study area. Five barrows and Polski Gradets tell are visible from the path.

The path to Manchova mogila descends and ascends for 700m (CDFig.363). The view from the path is good over the valley and its Northern part, as well as over a strip of a gully and a hill to the South East (CDFig.364). There is patchy visibility towards the Eastern hills and the Northeasternmost part of the study area. There are three tiny visible strips to the South/South West of the path. Five barrows are visible from the path.

The route to Taniokoleva mogila descends for 1.1km to the South East and ascends for 600m to the South (CDFig.365). The visibility from the path is similar to those discussed above but more restricted towards the Eastern hills, the Northeasternmost part of the study area and the West/SouthWest (CDFig.366). Four barrows are visible from the path.

The path to Kurdova mogila winds in a Southern/Southwestern direction, descending and ascending several times over a total distance of 2.6 km (CDFig.360). The visibility from the path is very similar to the path to Manchova mogila but with more visible areas in the central and Eastern part of the study area (CDFig.367). Five barrows and Polski Gradets tell are visible from the path.

The track, landscape and sites visibility from the path to Goliamata mogila is the same as the reverse route.

Tcherniova mogila

The route from Tcherniova mogila to Manchova mogila crosses the valley for 2.3km (CDFig.386). There is good visibility from this path over the Ovcharitsa valley, as well as over the hills and gullies to the South East and central parts of the study area (CDFig.387). There are scattered visible spots to the East and North East of the region and a tiny visible strip to the South of the path. Five barrows, one EBA flat site and Polski Gradets tell are visible from the path.

The path to Taniokoleva mogila also crosses the valley (CDFig.388). Initially, the route heads due South for 1.5km, then it follows a gully for 1.2km to the South East, finally ascending for 670m to the South. The visibility from the path is generally the same as the one from the previous path but more restricted to the East and the North East and lacks the visible strip to the South (CDFig.389). The same set of sites is visible again, except that Manchova mogila replaces Taniokoleva mogila.

The route to Kurdova mogila crosses the valley, first heading North West and then South West for a total of 1.7 km (CDFig.390). The path continues following a gully to the South East for 2.9 km, finally ascending to the South West for 350 m until Kurdova mogila is reached. The panorama from the path is strip-like towards the central part of the study area, patchy to the East and with a more consistent view over the Northern part of the Ovcharitsa valley (CDFig.391). The same five barrows, one EBA flat site and Polski Gradets tell are visible from the path.

The last path leads to Goliamata (and Malkata) barrows (CDFig.392). It crosses the valley (winding across and along it) for 3.4 km and ascends the hill for 300m. General visibility from the path is good over the valley and there are some scattered visible spots over the Eastern hills and the Northeasternmost part of the study area (CDFig.393). Also visible are three tiny strips South of the path. In addition to the previously visible sites, Barrow 4 is now in sight.

Manchova mogila

The logistical network for this barrow represents a combination of the Gonova and Galabovo site networks (CDFig.401). Another matching track is the path that crosses the study area straight to the South East from the barrow towards the sites in the Sokolitsa valley. The routes to Atanasivanova mogila (CDFig.82) (hence both the Iskritsa sites) and Gudgova mogila (CDFig.163) (hence the Klisselika tell) were discussed above, see p. 199-200 and 202. The same direct South East route is used to reach MIBC. As observed in previous case studies, one branch leads to MIBC1 (CDFig.402) and MIBC2 (CDFig.403) and another to MIBC3 (CDFig.404) and MIBC4 (CDFig.405). The general landscape visibility from the paths to the four barrows is similar – a good panorama over the Northern part of the Ovcharitsa valley, a consistent strip-like view over the central part of the study area and visible spots towards the North Eastern, Eastern and Southern parts of the study area (CDFig.406), (CDFig.407), (CDFig.408). All the paths share the same site visibility – six barrows and two settlements. The path to MIBC2 (CDFig.409) provides good visibility over the Sokolitsa valley, therefore over two more sites – the Iskritsa pit site and the Klisselika tell. Intervisibility between the barrows from the cemetery is very high – only MIBC1 is not seen from any of the paths to the other three barrows.

The path to Kurdova mogila matches (CDFig.410) to great extent the one from Goliama Detelina, so both paths share the same landscape and site visibility (CDFig.411).

The last path to be discussed is to Taniokoleva mogila, which follows the ridge of the hill for 1.2 km to the South East until the barrow is reached (CDFig.412). The panorama from the path and the site visibility is better than from the Goliama Detelina path (CDFig.413).

Kurdova mogila

The path to the South of Kurdova mogila splits into several tracks after a 3-km route on the ridge to the South East. The Western branch continues to follow the ridge, first 300 m to the South West and then 1.2 km to the South East until it reaches MIBC1 (CDFig.436). The Eastern branch ascends for 1.1 km, when two parallel segments due South appear – one to MIBC3 (CDFig.437) and 4 (400m long) (CDFig.438), the other to MIBC2 (500m long) (CDFig.439). After the forks to MIBC2-4, the Eastern branch continues to ascend Southeastwards for 900m, when it turns South. The path descends for 2.5 km and then bifurcates – one to the South, to the dwelling part of Iskritsa (200m long) (CDFig.440) and the other to the West/ South West to the pit part of the Iskritsa site (400m long) (CDFig.441). Since the path is common almost to the point where it reaches the MIBC, it has similar landscape and site visibility. The panorama is good over the central and Eastern parts of the study area, with visible spots to the North of the Ovcharitsa valley and to the South of the Sokolitsa valley (CDFig.442). The paths to MIBC3 and 4 (CDFig.443) have better visibility to the South. The path to MIBC2 has a view over the South part of the Sokolitsa valley (CDFig.444). Three barrows and Polski Gradets pit site are visible from the paths. In addition to these sites, the Klisselika tell and the pit part of the Iskritsa site are visible from the path to MIBC2. There is an interesting intervisibility pattern between the barrows of the MIBC. From the path to MIBC1 (CDFig.445), none of the other three barrows are visible, while all four are visible from the paths to MIBC2-4. The continuation of the path that leads to both parts of the Iskritsa site shows good visibility over the Sokolitsa valley and all the sites located there, as well as to some areas South of it. MIBC3 and 4 are, however, not visible from the path, once again confirming the specific visual status of the MIBC.

The path to Taniokoleva mogila descends and ascends low ridges several times to the North East, over a total distance of 1.5 km (CDFig.446). The panorama from the path is good over the central and Eastern parts of the study area, with some visible spots to the North of the Ovcharitsa valley (CDFig.447). Four barrows, one EBA settlement and the Polski Gradets tell are visible from the path.

MIBC

The paths to be summarised here are the tracks from MIBC to the Iskritsa site. There are two main routes to the dwelling and the pit part of Iskritsa site – one starting from MIBC1 (CDFig.471) and MIBC2 (CDFig.472), the other – from MIBC3 (CDFig.473) and MIBC4 (CDFig.474). The path from each individual barrow eventually splits to reach the two parts of Iskritsa site. Similar tracks lead to similar visibility – one pattern from the paths to the Iskritsa pit site (CDFig.476), (CDFig.480), (CDFig.482), another from the paths to the Iskritsa dwelling site (CDFig.475), (CDFig.479), (CDFig.481). The best landscape and site visibility is from the paths MIBC2 – Iskritsa site (pit part (CDFig.478), and dwelling part (CDFig.477)). The panorama from all the eight paths is mainly towards the Sokolitsa valley, which means that moving site locales to the South of the Ovcharitsa valley assures a view to the South - over the ancient, traditional settlement area. The spatial distinction from the initial BA occupation area of the Ovcharitsa valley is reinforced by the visual characteristics of the MIBC location, from which the Ovcharitsa valley is not visible at all. The gradual resettling of the old settlement area within the Sokolitsa valley was initiated first with the visual connection, later to be followed by the re-occupation of the LCA tells.

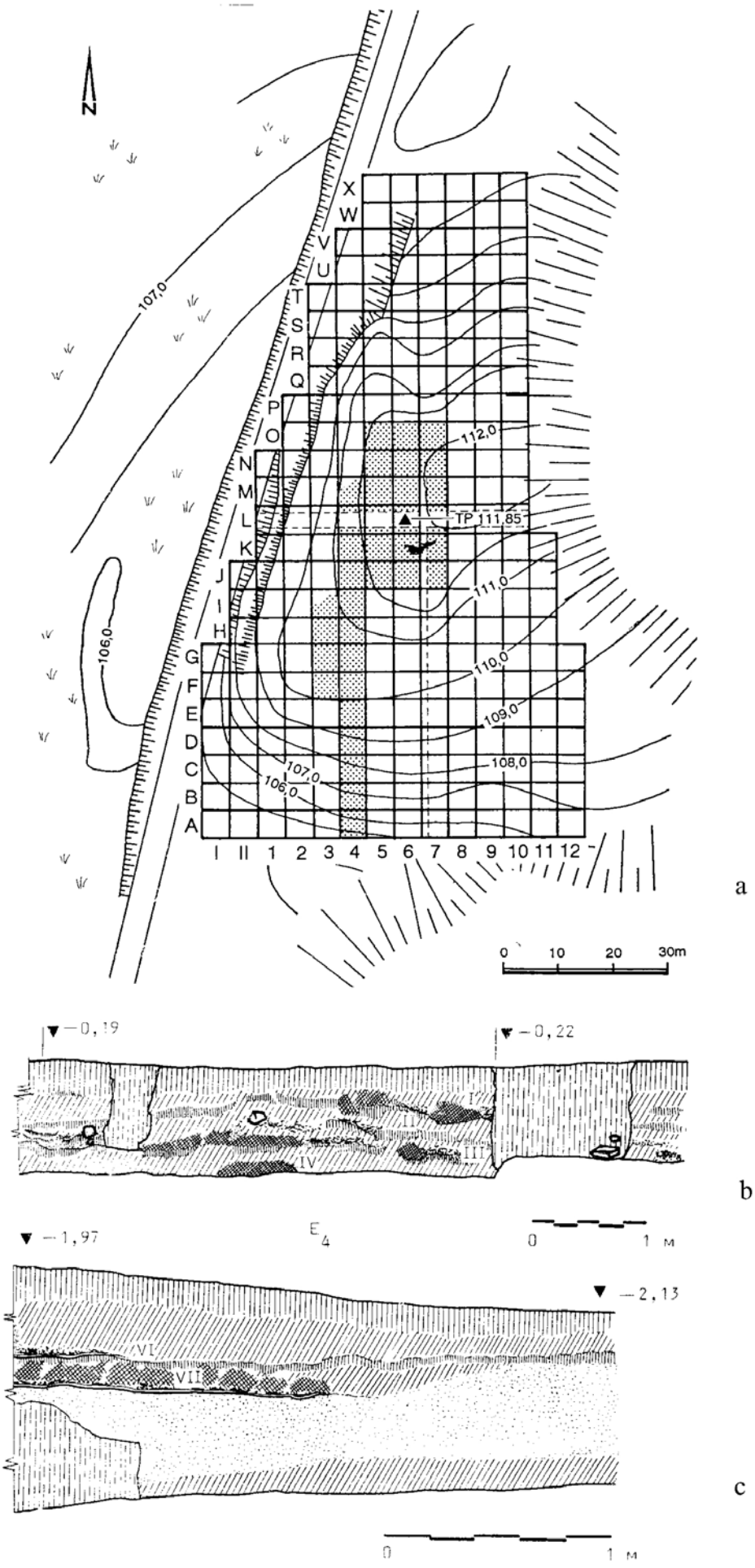
Appendix B : Illustrations

This appendix contains illustrative material to accompany the text. The list of figures is provided in the book content. The majority of the illustrations derive from publications. The set of illustrative material is not a complete record but a representative selection of important and datable finds. On some of the Figures, there is no scale, since it was not provided on the originals. On other Figures, the scale has no numbers but, generally, scales in the plans and profile illustrations correspond to metres, while, in the pottery and artefact illustrations, to centimetres. Since the original publication of materials from the Iskritsa site and the Gudgova tell did not contain a key, none is provided here.

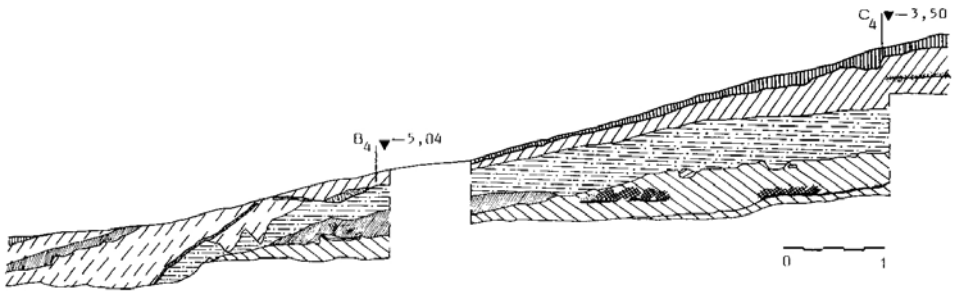
The layers in profiles of the tells contain the identification numbers given them during the excavations, in ascending order, from top to bottom, while in the text they are discussed and re-numbered in the order of their appearance as ascending from bottom to top.

Because CoralDraw is unable to provide Slavic accents as published in the German periodical “SASTUMA” for the source of many illustrations, Leštakov 1993 and 2000 is spelt in an Anglicised manner (viz., Leshtakov 1993 and 2000) and Kančev and Kančeva-Russeva 1996 is spelt Kancev and Kanceva-Russeva.

The drawings of finds from Iskritsa site are made by me and Aneta Petrova and inked in by Jacqui Hutton.



AFig. 5.1.1 General Plan of Galabovo tell and profiles in E4, D4
Source: Lestakov 1993 (a), Panayotov et al. 1991(b,c)



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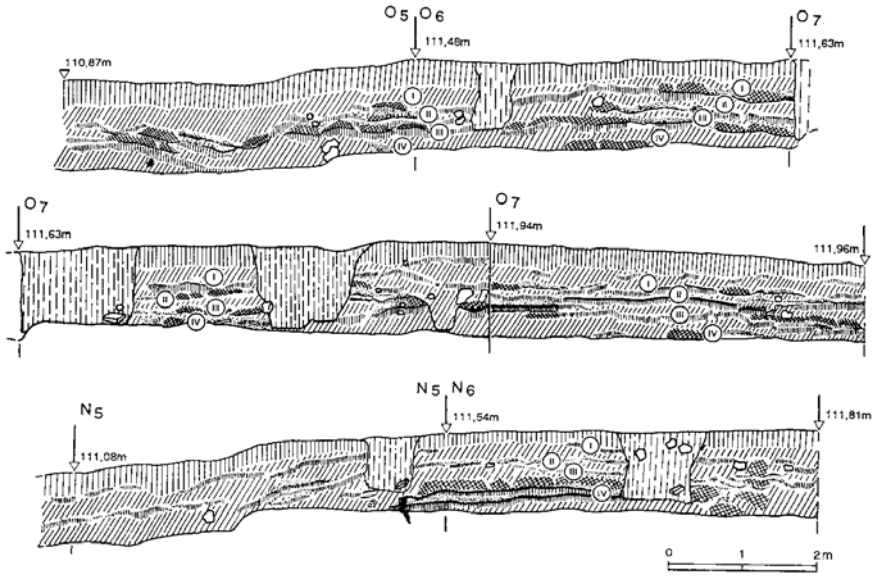
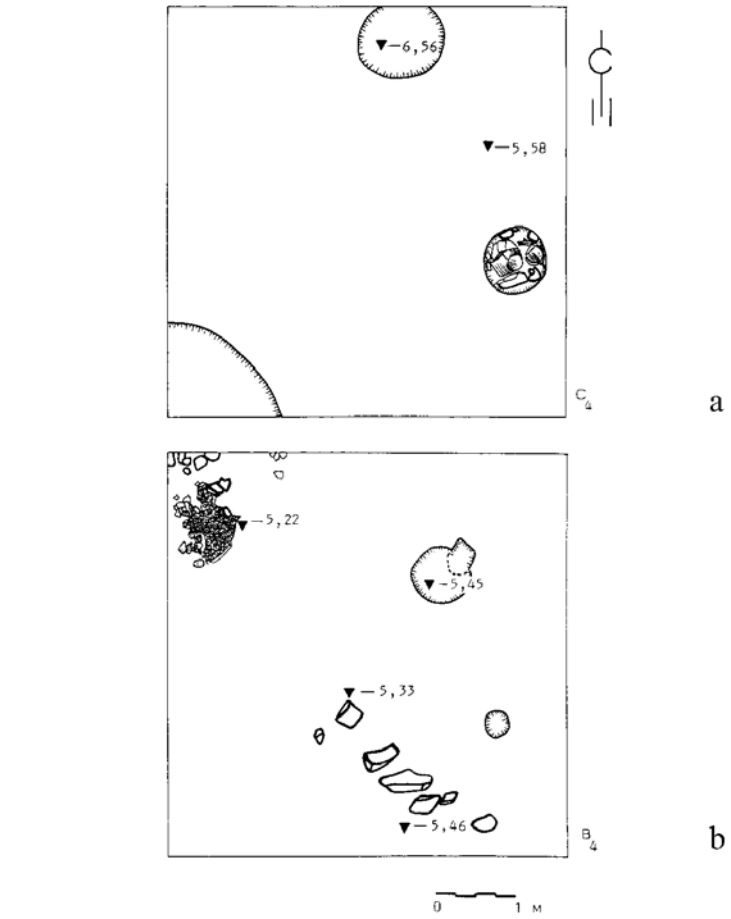


b

AFig. 5.1.2 Profiles in B4/C4 - Late Copper Age (LCA) and profiles in O5/O6, O7, N5/N6 - Bronze Age (BA) horizons X-XIII

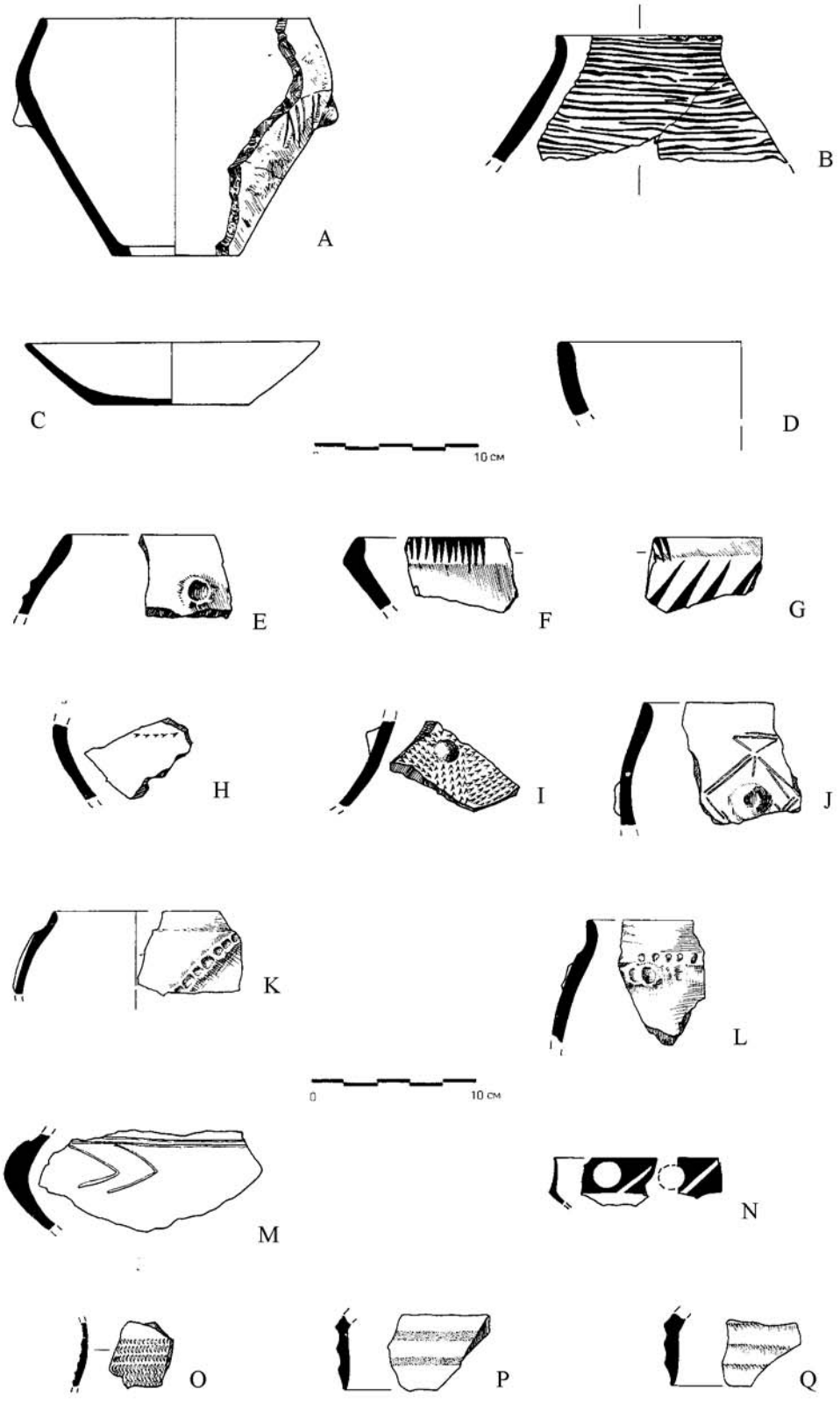
Source: Panayotov et al. 1991 (a), Leshtakov 1993 (b)



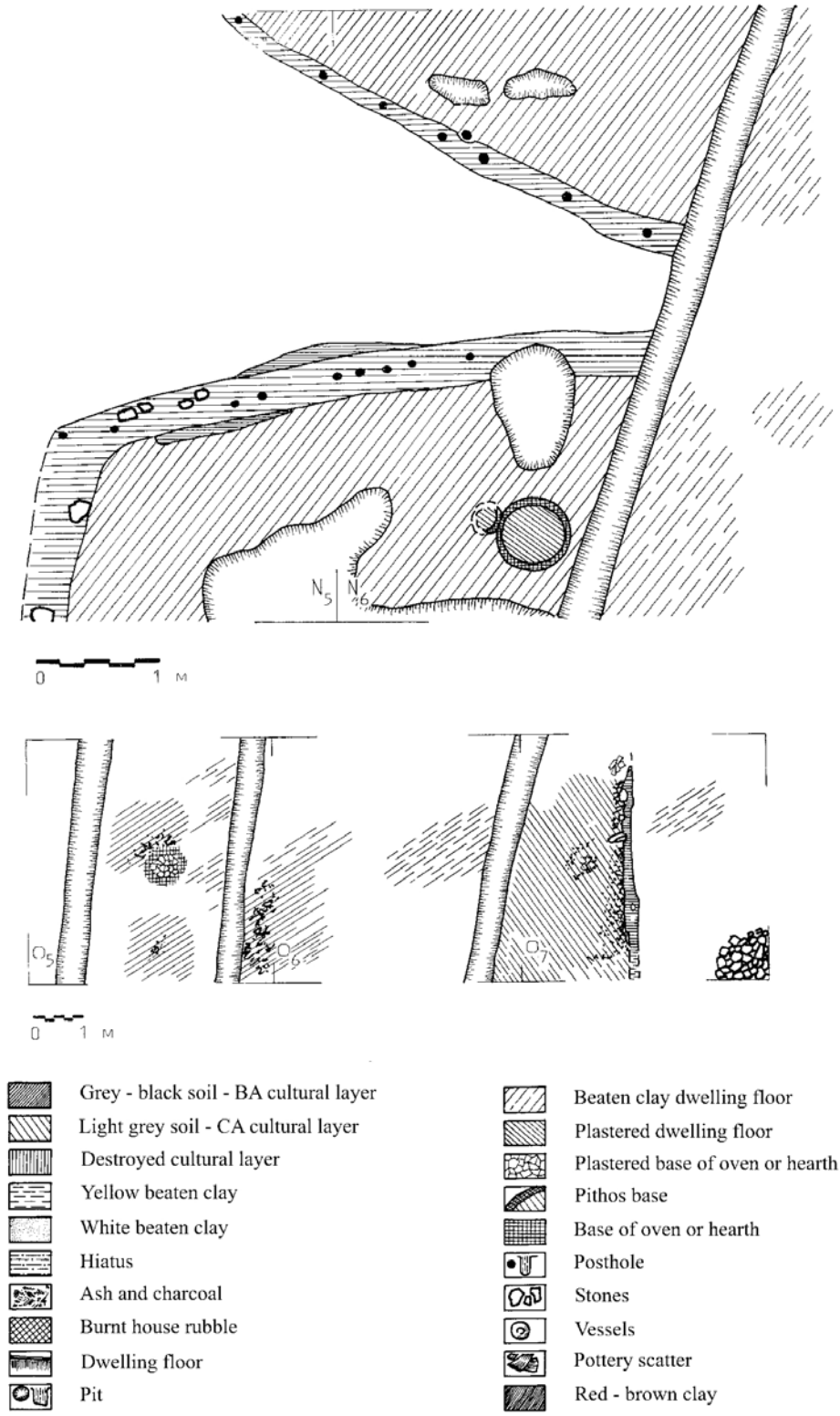
Unsurveyed area.

AFig. 5.1.3 Houses from LCA horizons I and II in C4, and a pit from LCA horizon III in B4

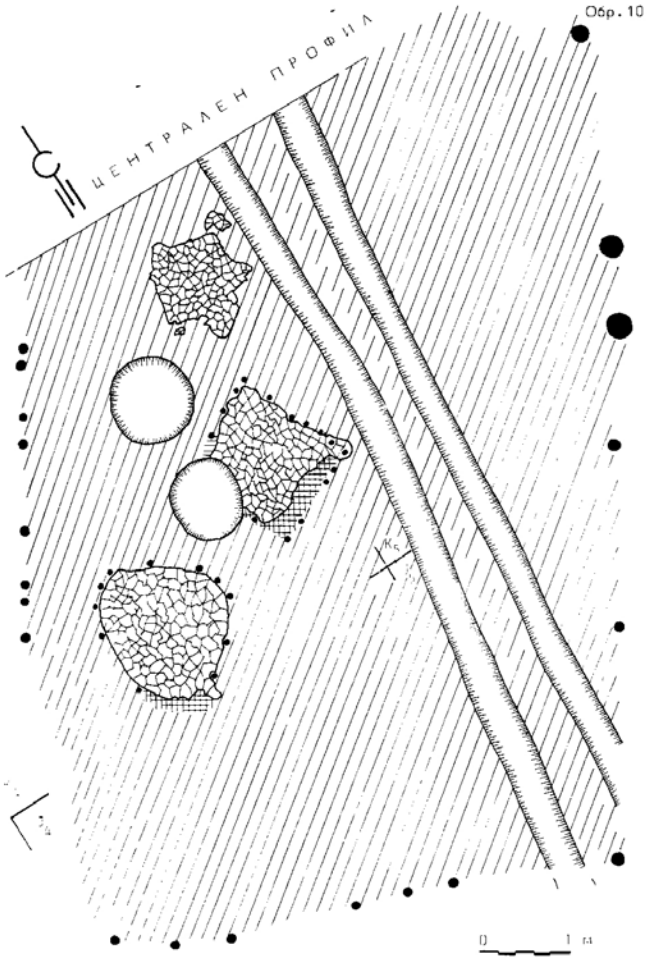
Source: Panayotov et al. 1991



AFig. 5.1.4 Pottery from LCA horizons I-III
Source: Panayotov et al.1991



AFig. 5.1.5 Houses from BA horizon X and key for Galabovo illustrations
Source: Panayotov et al. 1991



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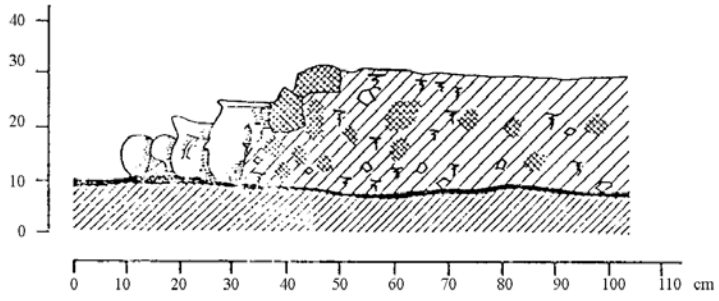
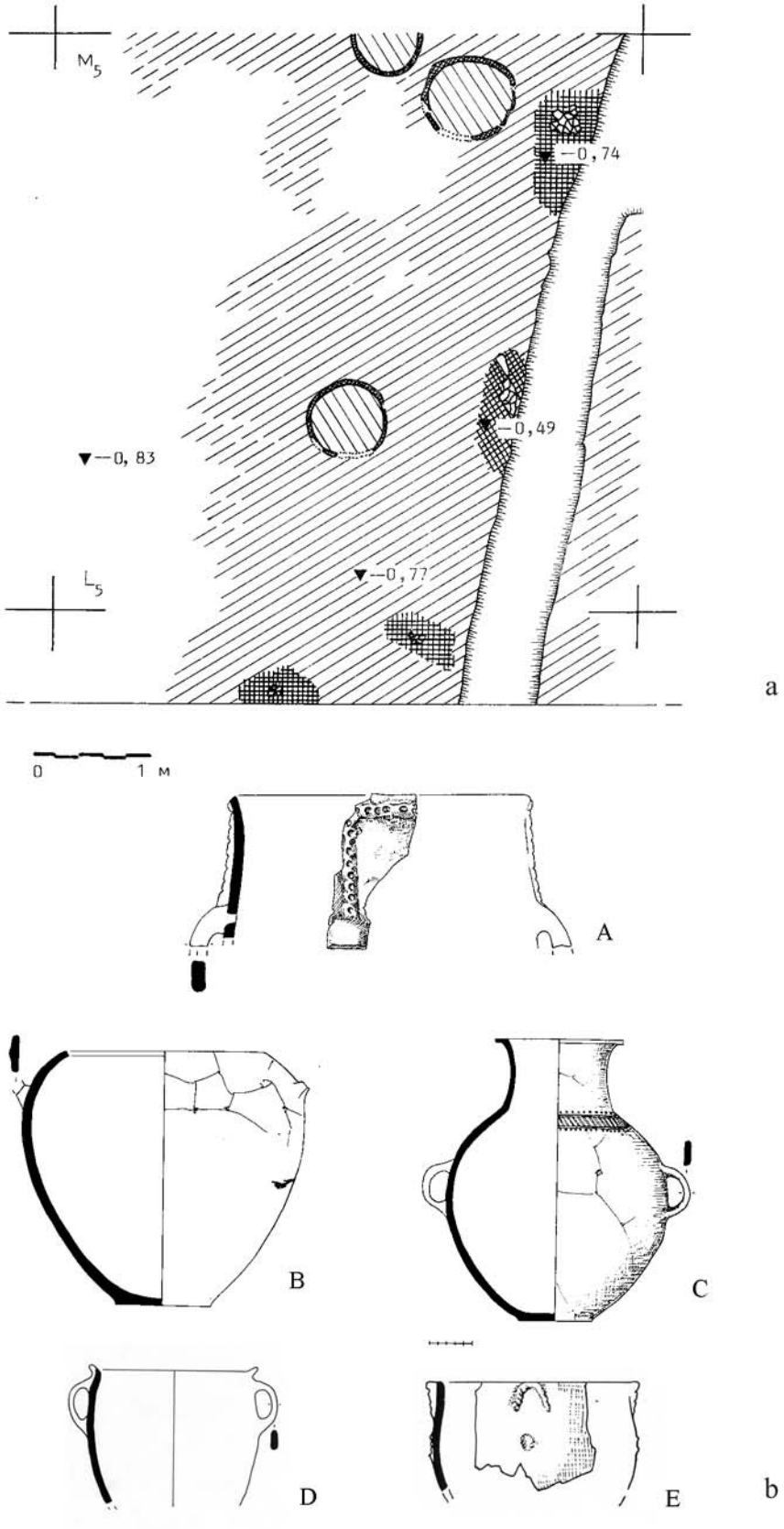


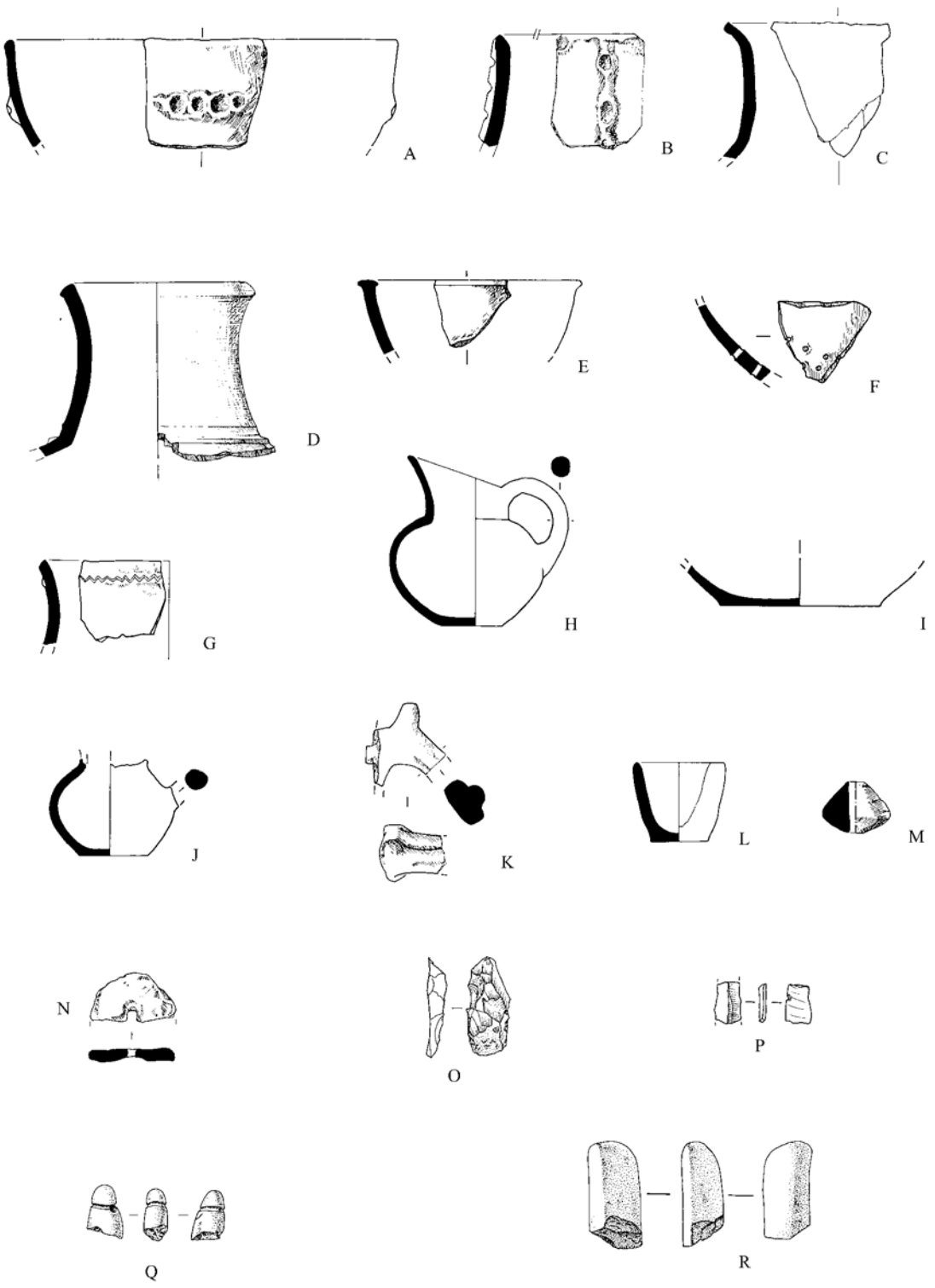
b

AFig. 5.1.6 House in J3-5/K3-5/L3-5 from BA horizon XI and the pottery depot from the house

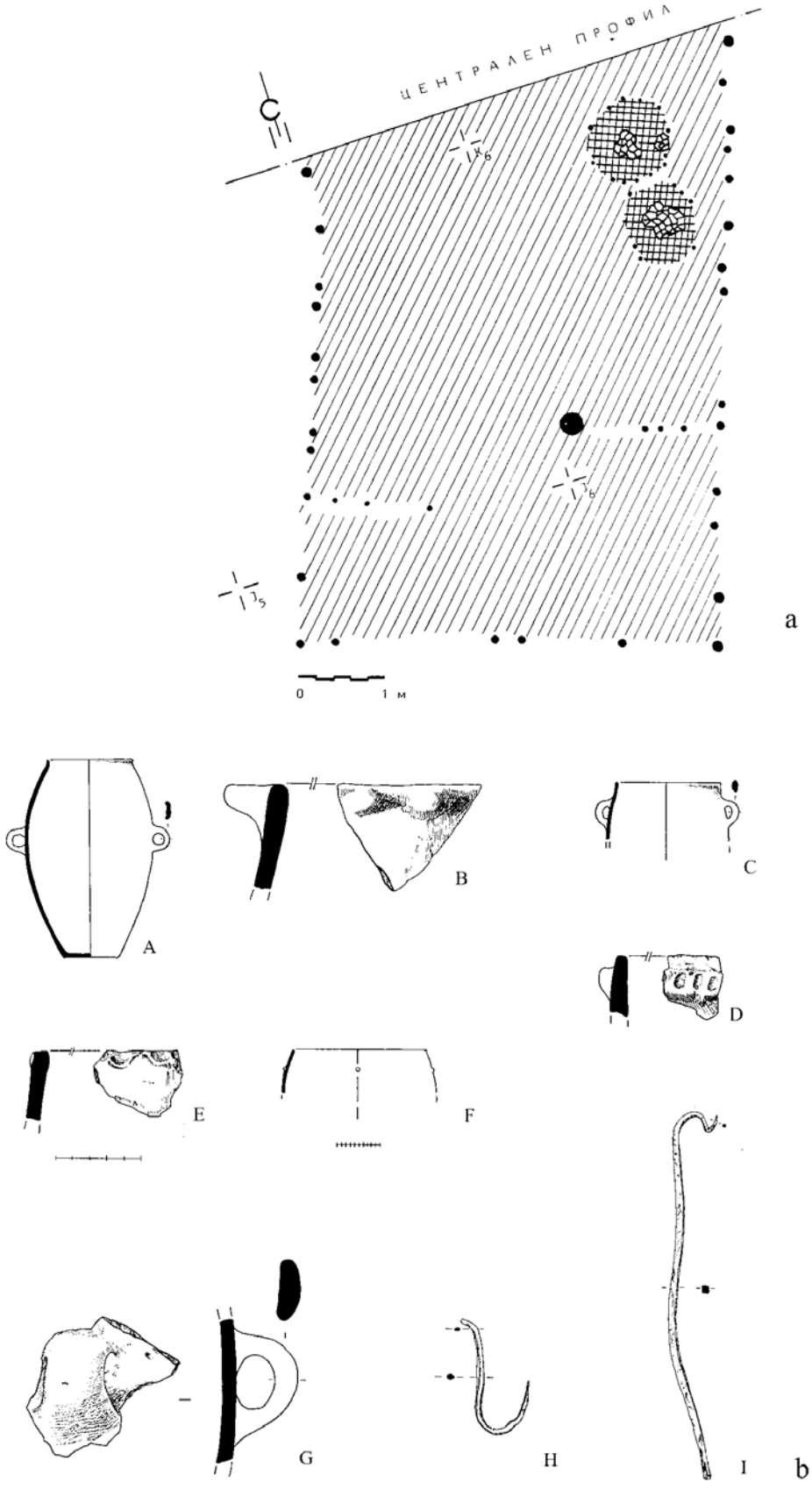
Source: Panayotov et al. 1991 (a), Leshtakov 2000 (b)



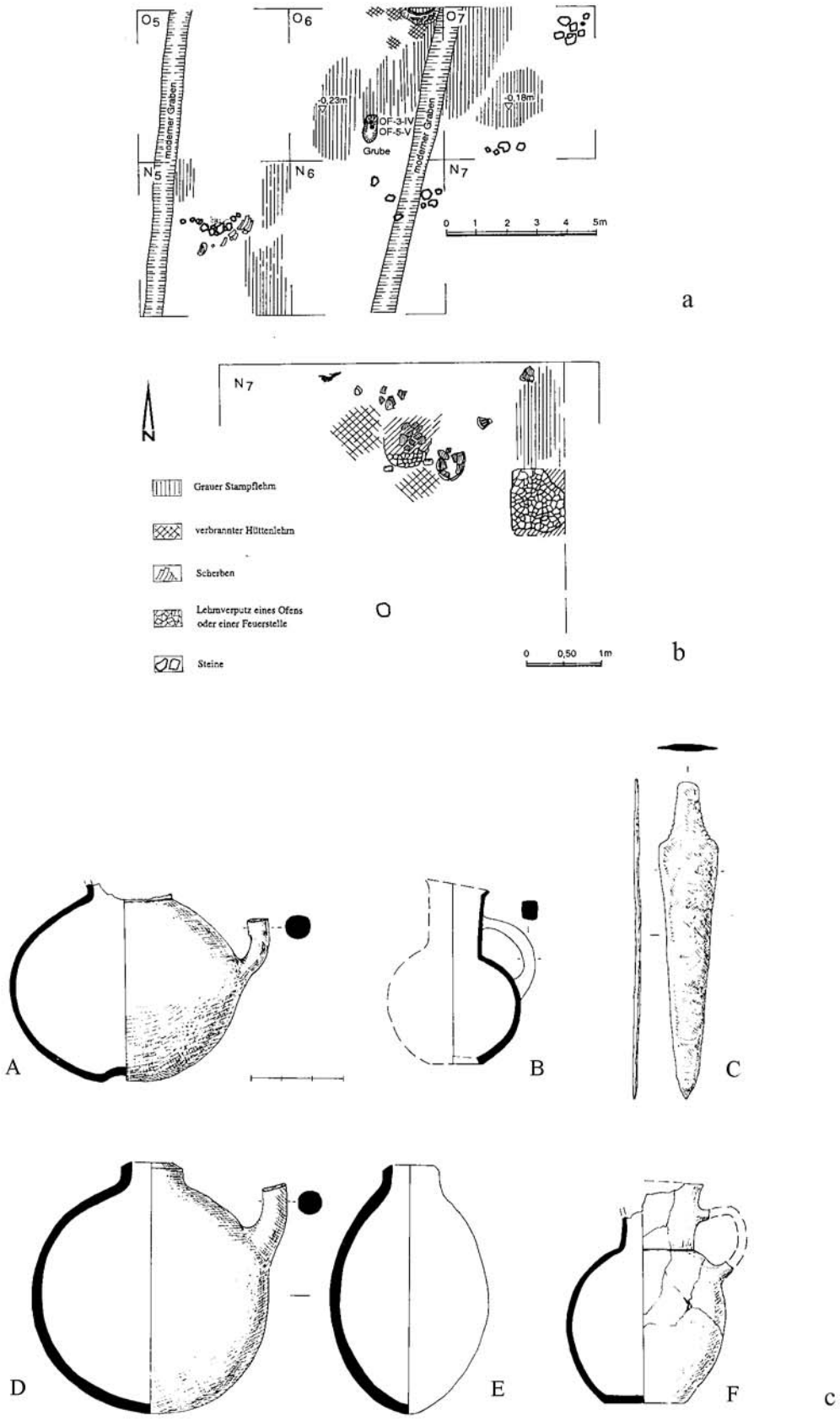
AFig. 5.1.7 House from M4/5 - L4/5 from BA horizon XII and pottery from the house
Source: Panayotov et al. (a); Leshtakov 1993 (b)



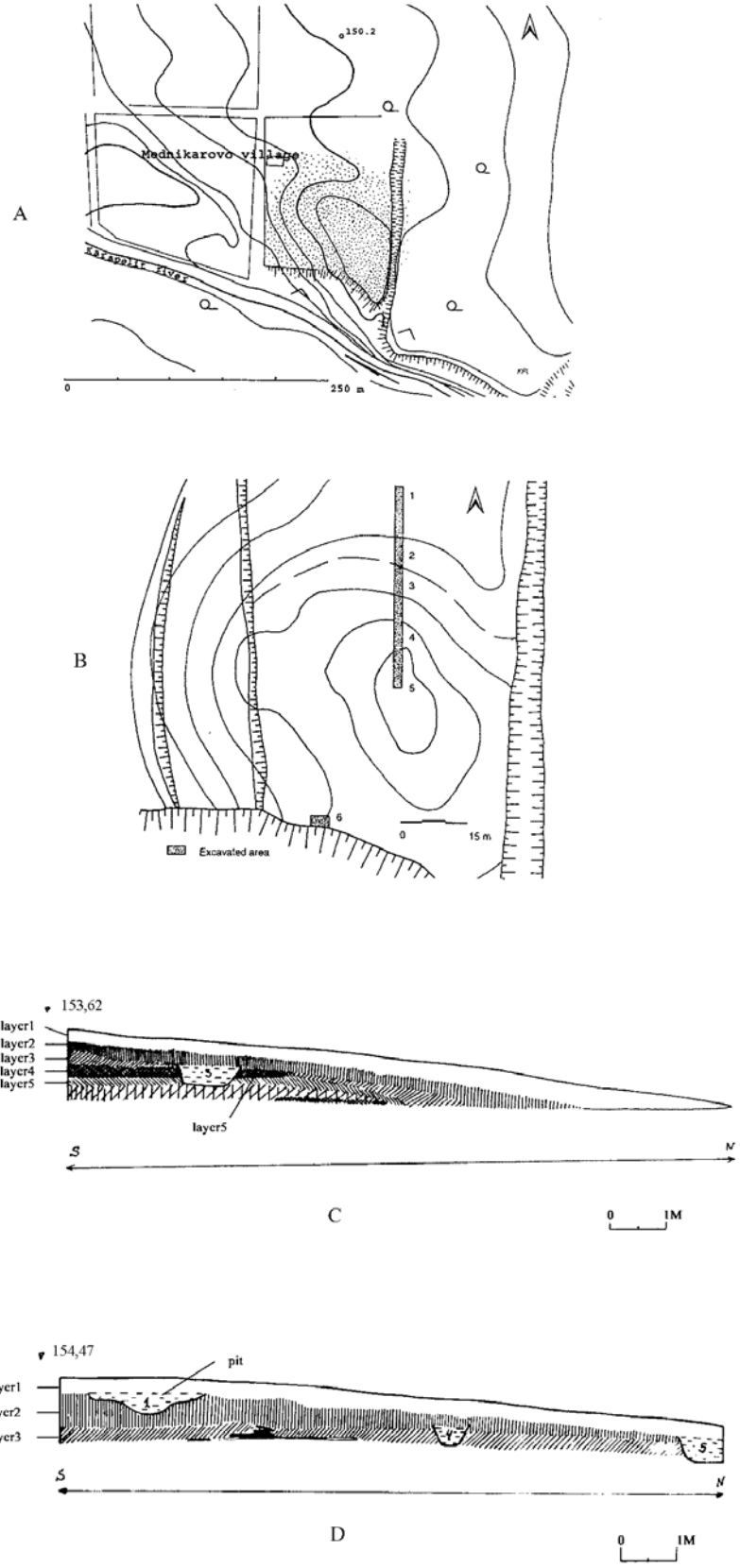
AFig. 5.1.8 Artefacts from house in M4/5 - L4/5 from BA horizon XII
Clay (A - N, Q); flint (O, P); stone (R) M 1 : 2.5
Source: Leshtakov 1993



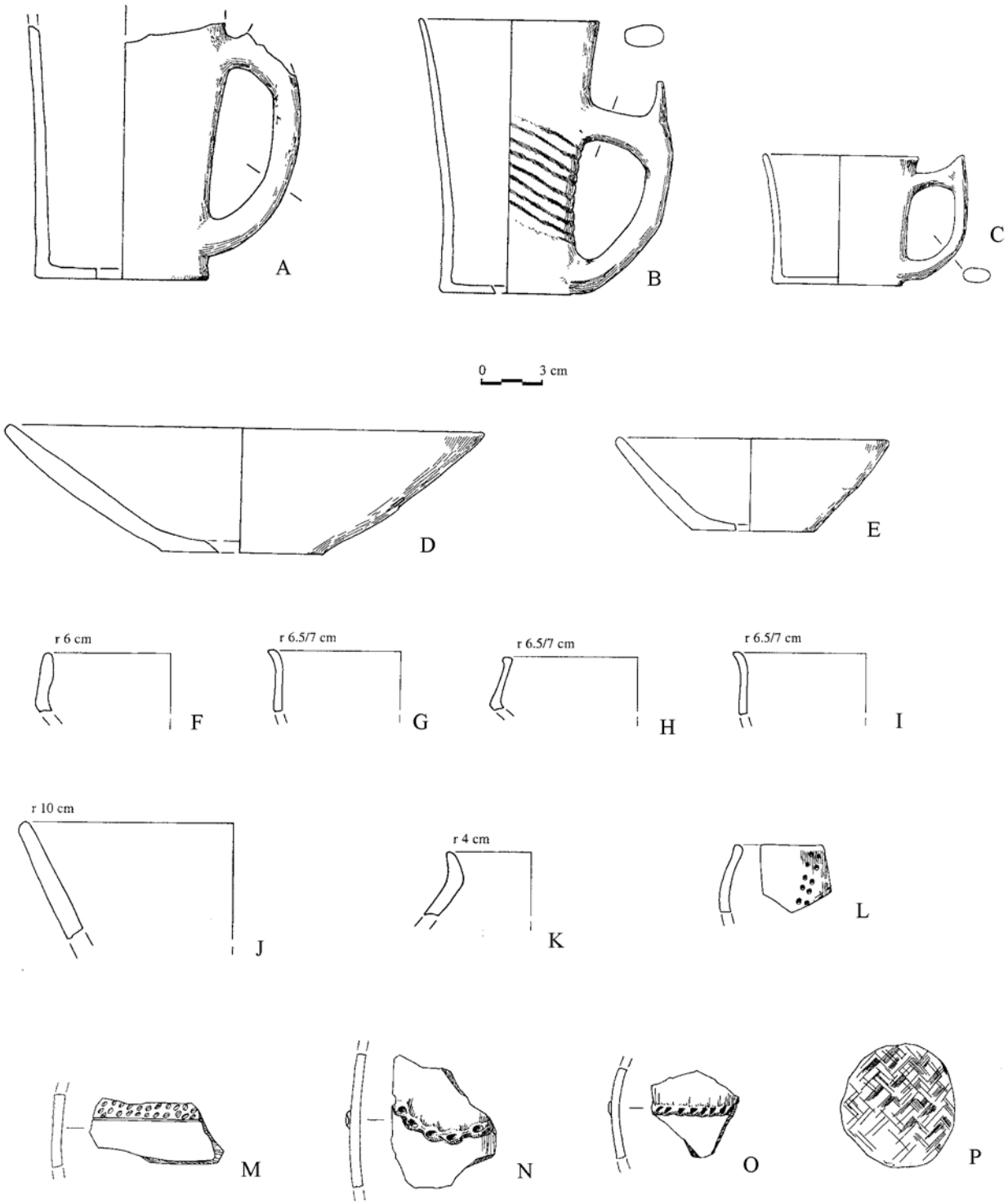
AFig. 5.1.9 House in J5/6 - L5/6 from BA horizon XII and artefacts from the house
Clay (A - G); bronze (H, I) M 1 : 2.5 (A - I)
Source: Panayotov et al. 1991 (a), Leshtakov 1993 (b)



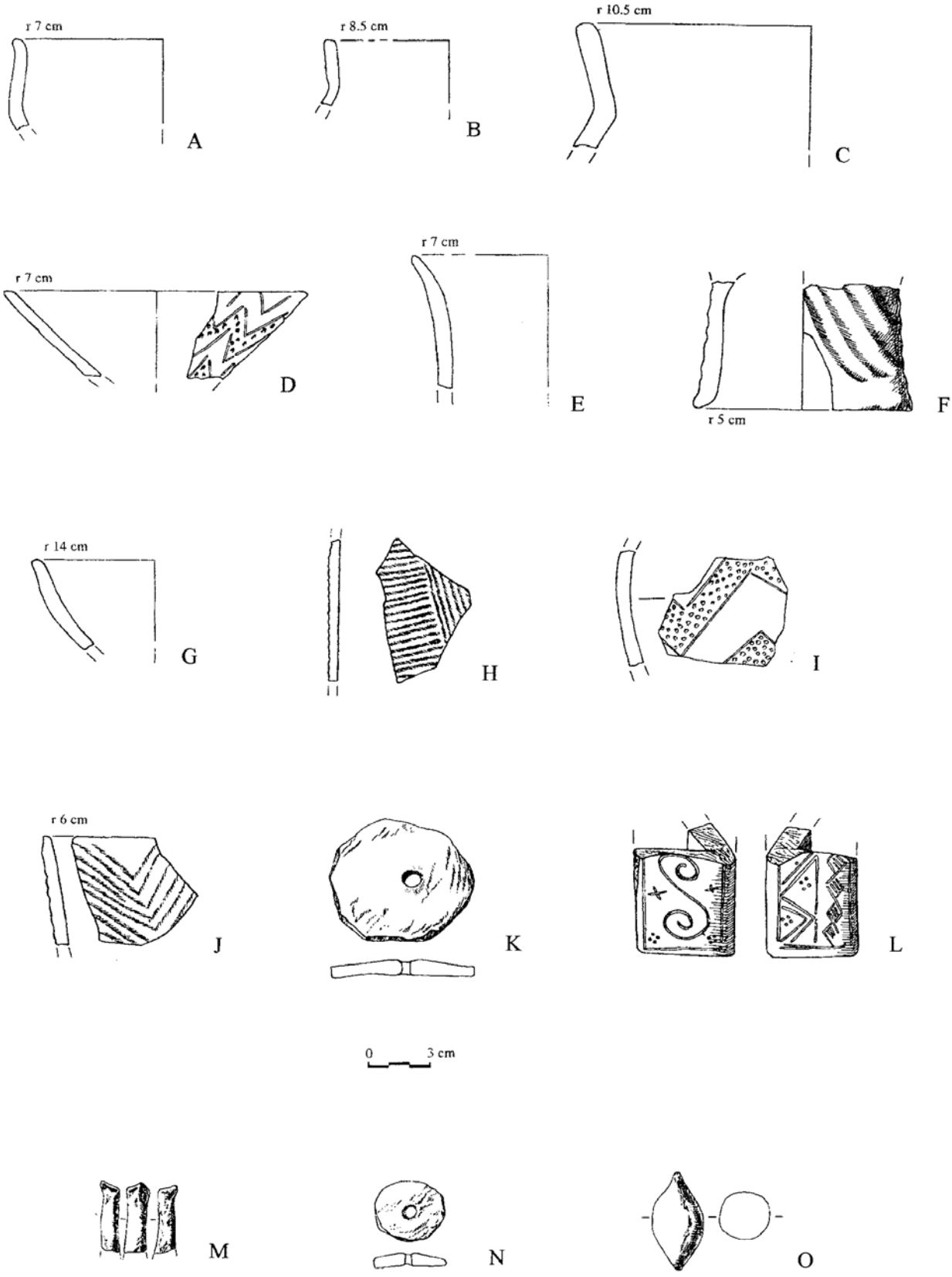
AFig. 5.1.10 Feature plans from BA horizon XIII; pottery from BA horizon XIII
Clay (A, B, D - F), bronze (C)
Source: Leshtakov 1993



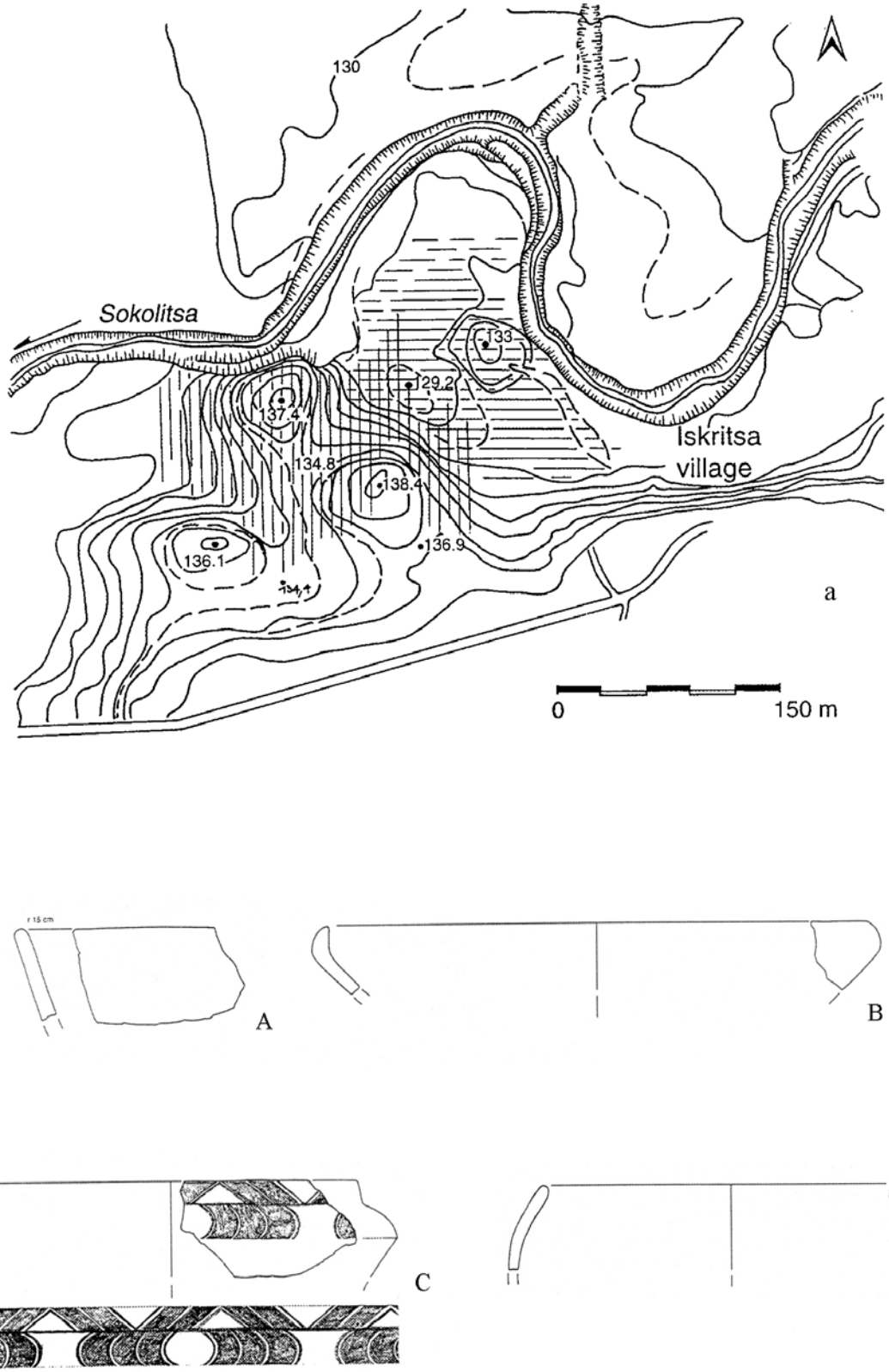
AFig. 5.4.1 General plans and profiles from Mednikarovo tell
C: Sondage 3 west profile, layers 1-5; D: Sondage 2 west profile, layers 1-3
Source: Leshtakov et al. 2001



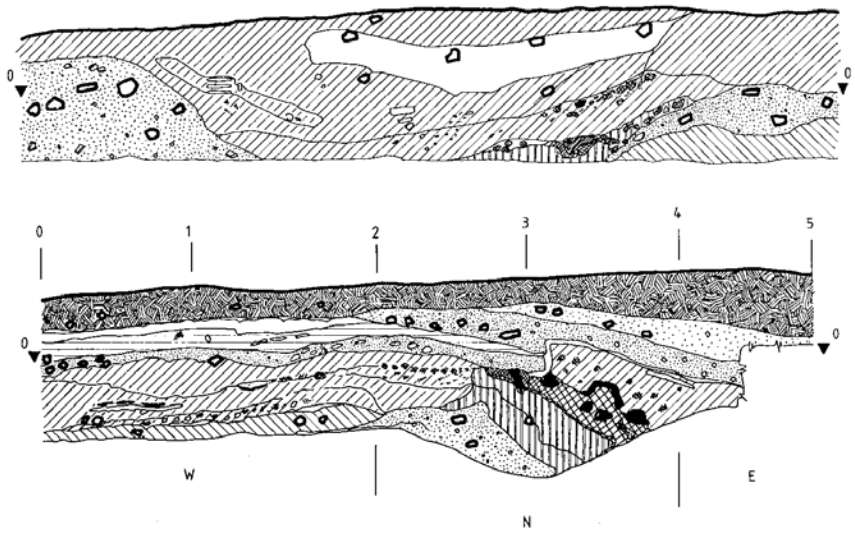
AFig. 5.4.2 Pottery from Mednikarovo tell
Source: Leshtakov et al. 2001



AFig. 5.4.3 Pottery from Mednikarovo tell
Source: Leshtakov et al. 2001



AFig. 5.6.1 General plan of Iskritsa flat site; pottery from Iskritsa dwelling site
Source: Leshtakov et al. 2001 M 1 : 3 (A - D)



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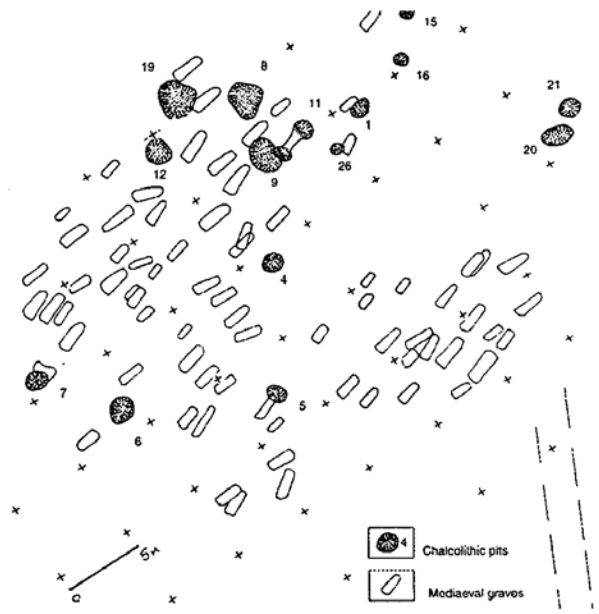

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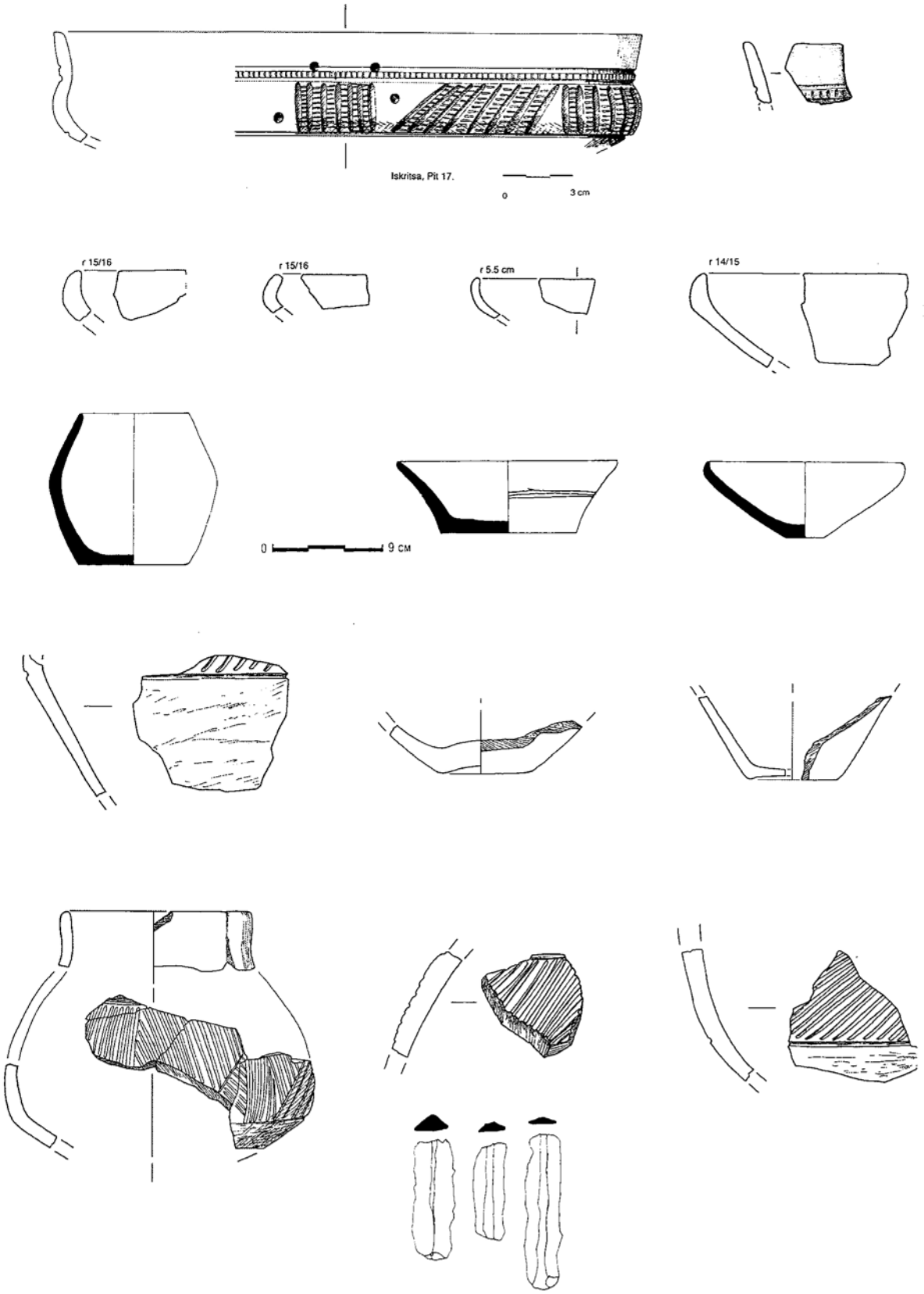
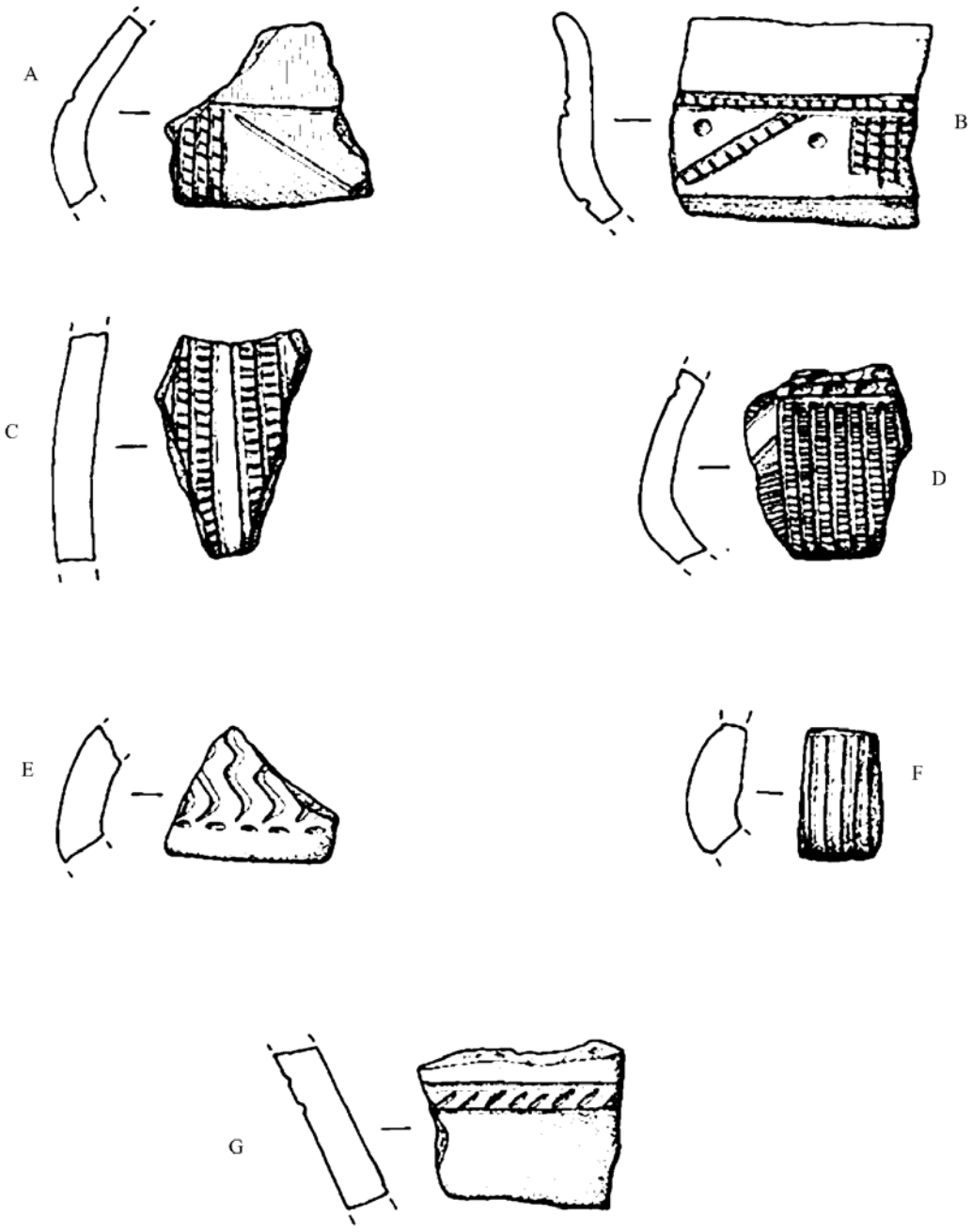
AFig. 5.6.2 Profiles from Iskritsa dwelling site; plan of Iskritsa pit site
Source: Leshtakov et al. 2001

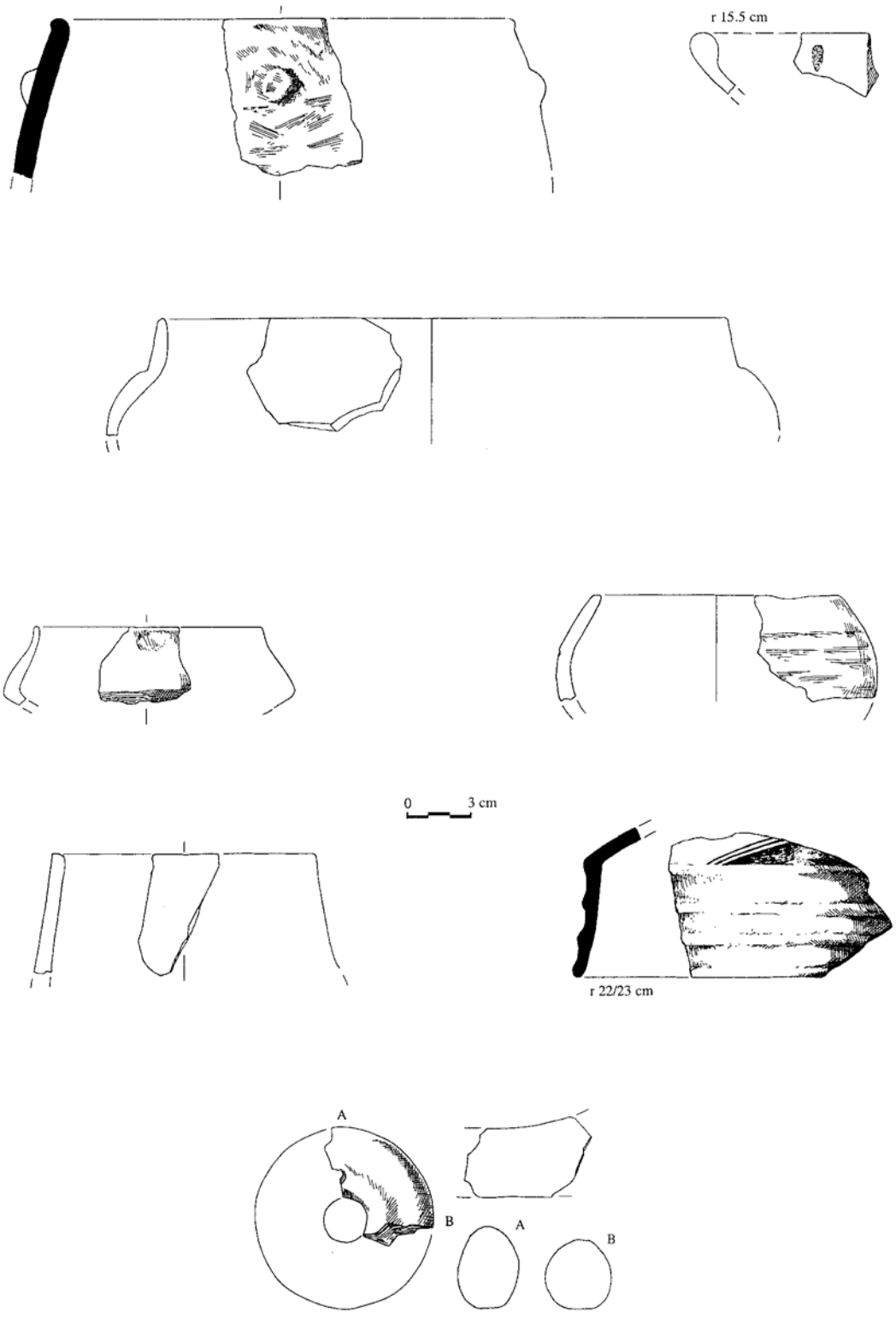


AFig. 5.6.3 Pottery and flint tools from Iskritsa pit site
Source: Leshtakov et al. 2001 (A, C-F, J-O); Sheileva 1994 (B, G-I, P)

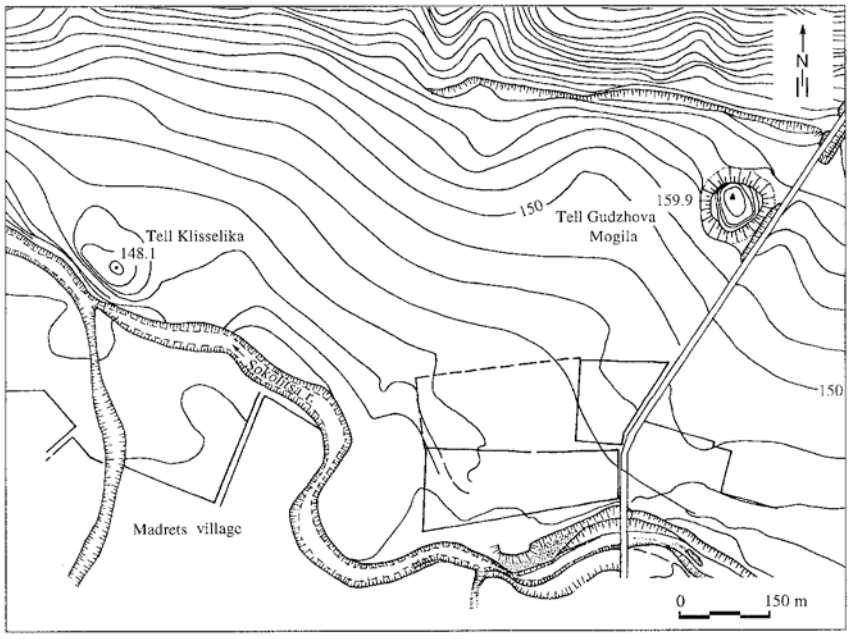


AFig. 5.6.4 ECA pottery from Iskritsa site

M 1:2



AFig. 5.6.5 Pottery from Iskritsa dwelling site
Source: Leshtakov et al. 2001



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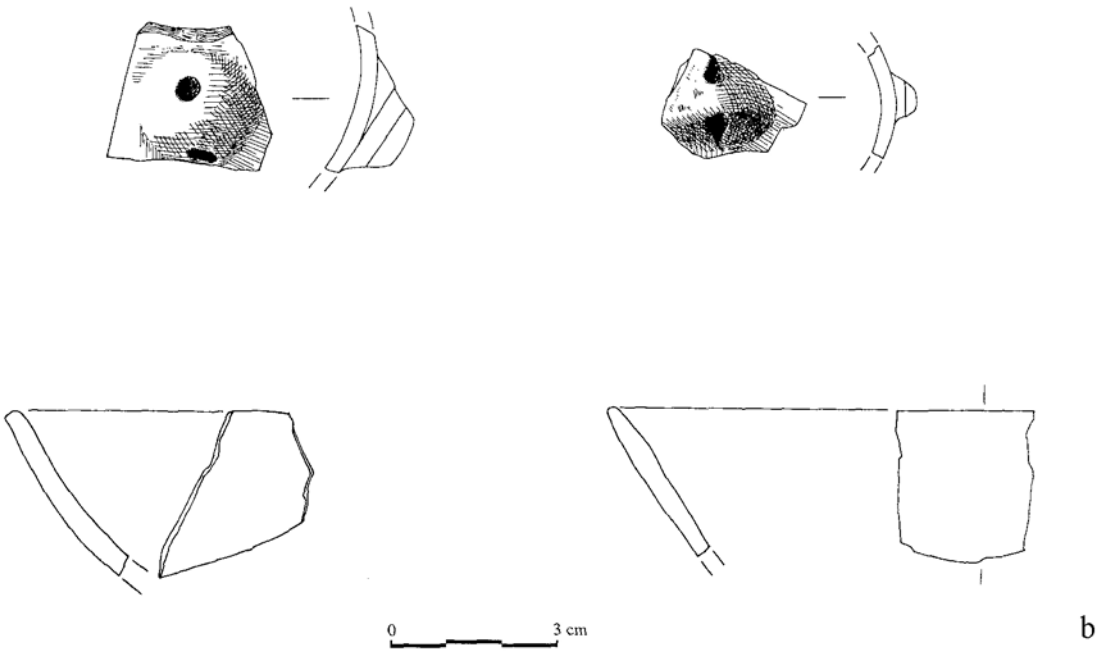
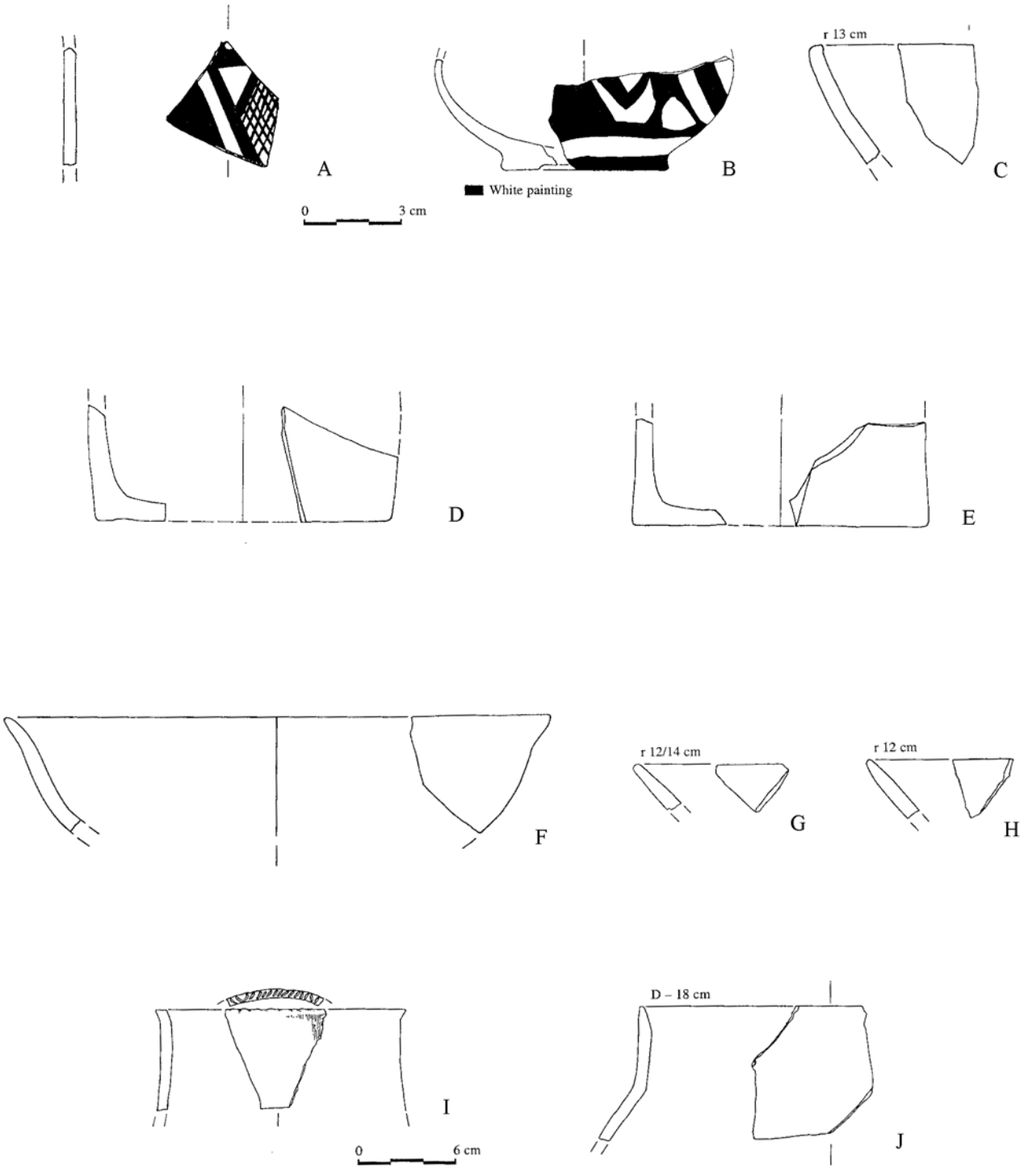
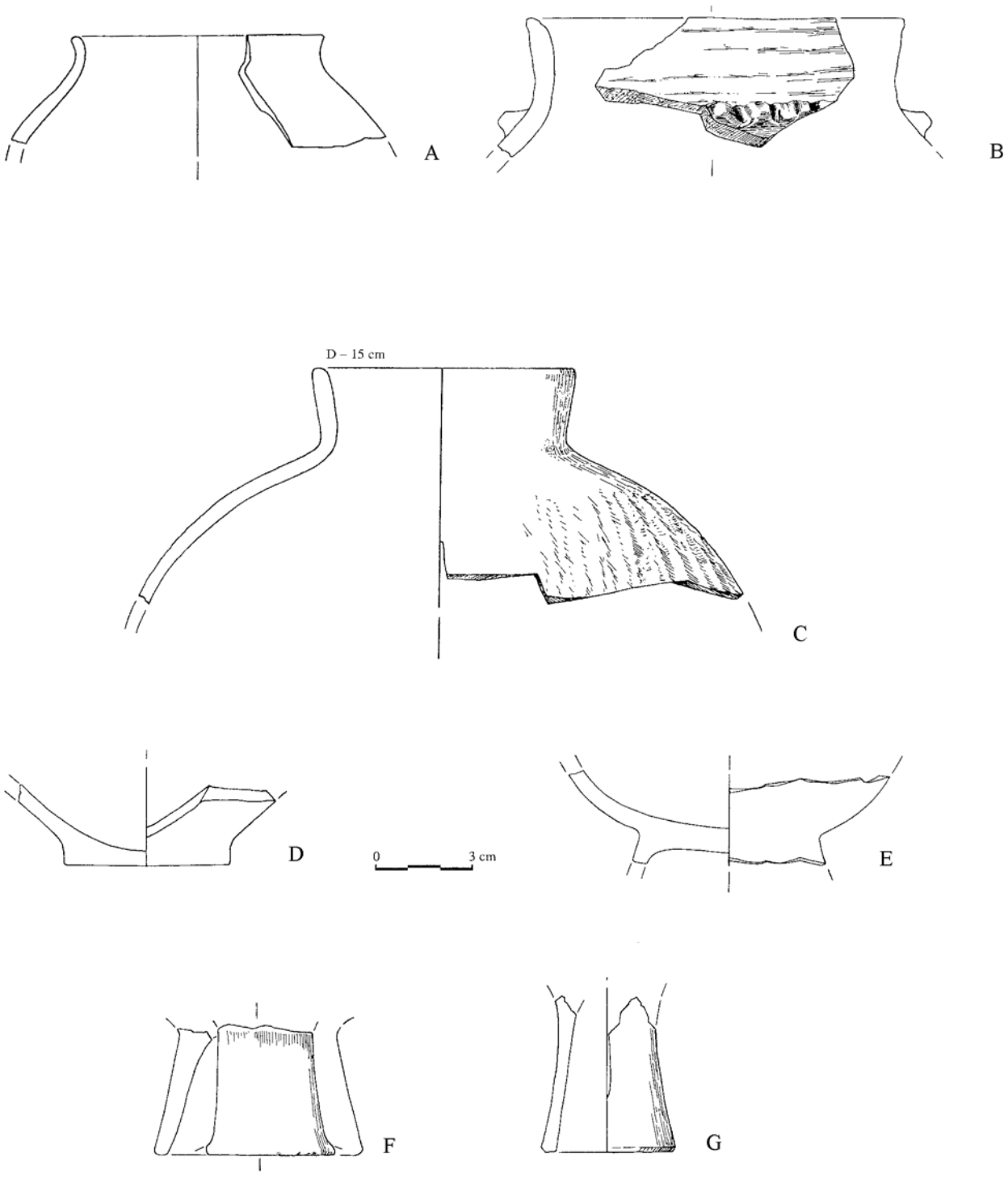


b

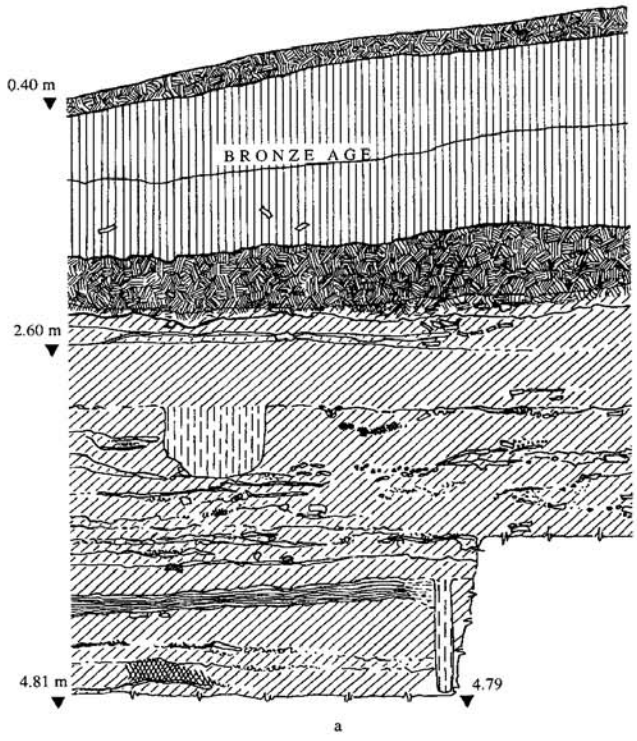
AFig. 5.7.1 General plan of Klisselika tell; pottery from the tell
Source: Leshtakov et al. 2001



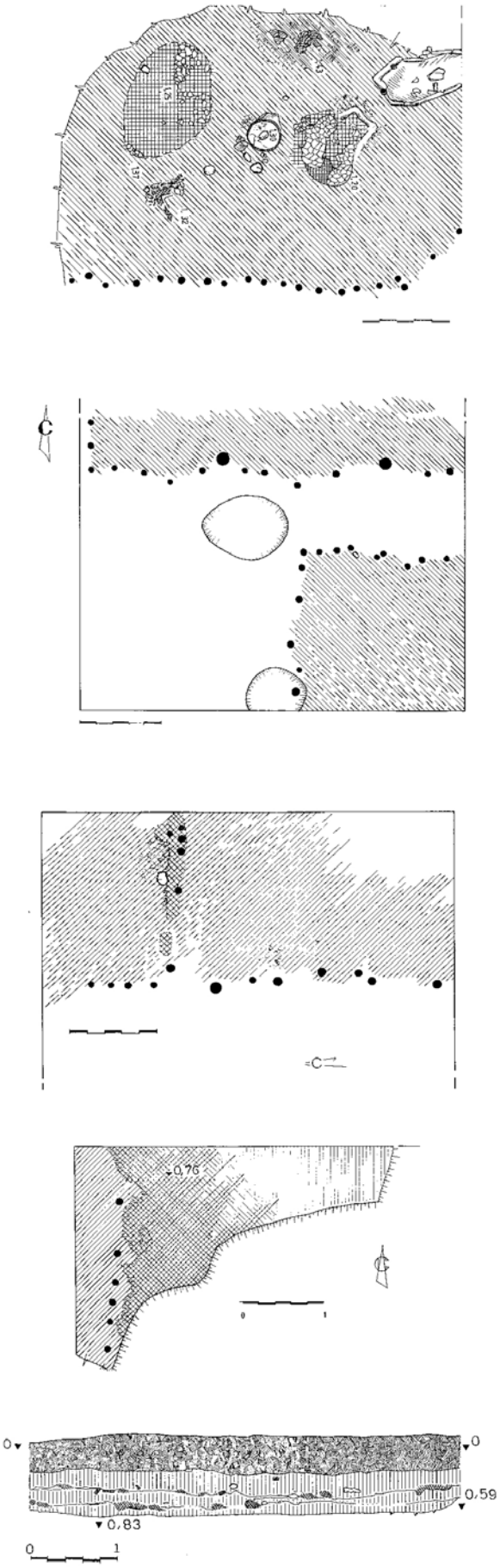
AFig. 5.7.2 Pottery from Klisselika tell
Source: Leshtakov at al. 2001 M 1 :2 (D, E)



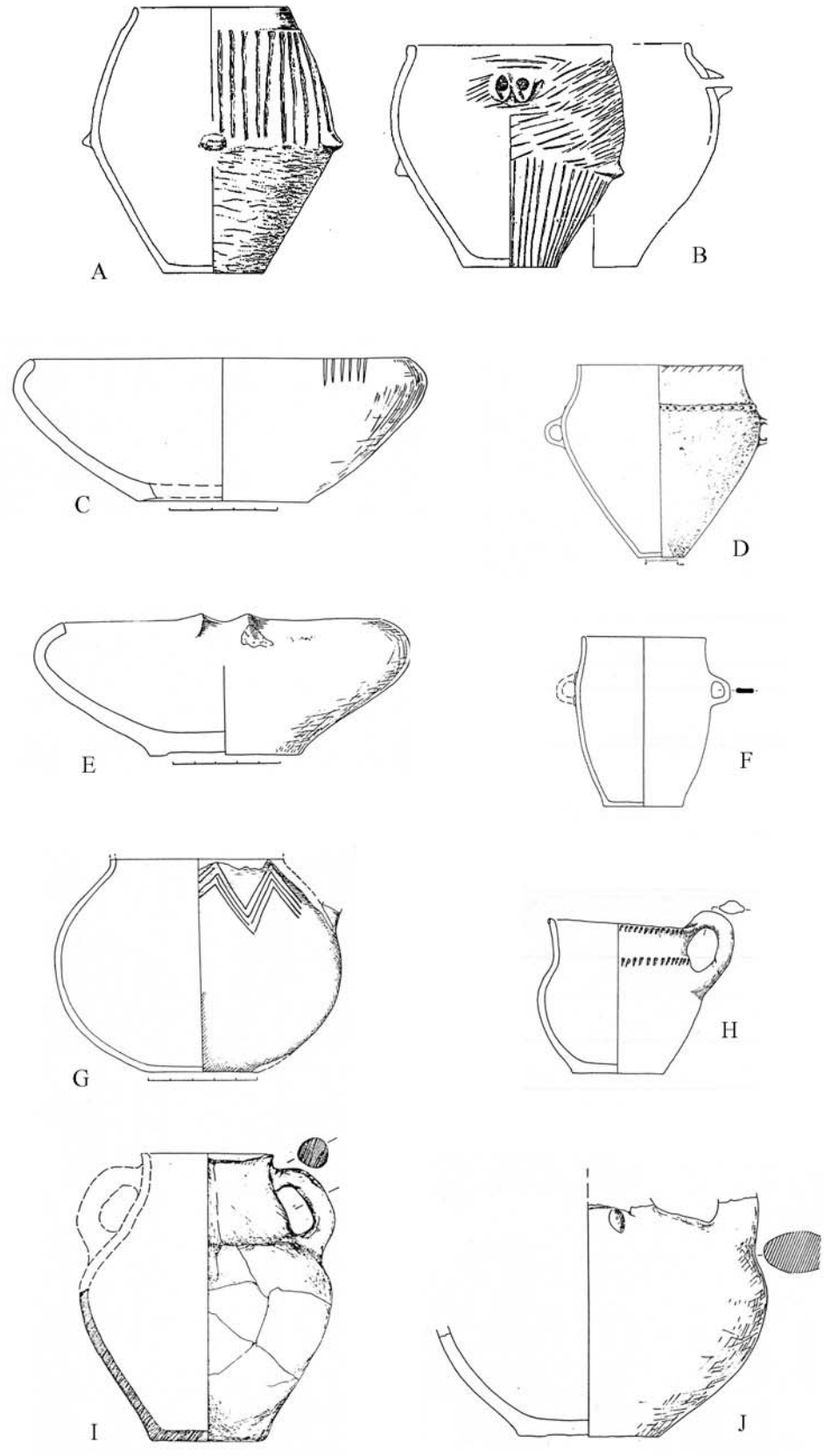
AFig. 5.7.3 Pottery from Klisselika tell
Source: Leshtakov et al. 2001



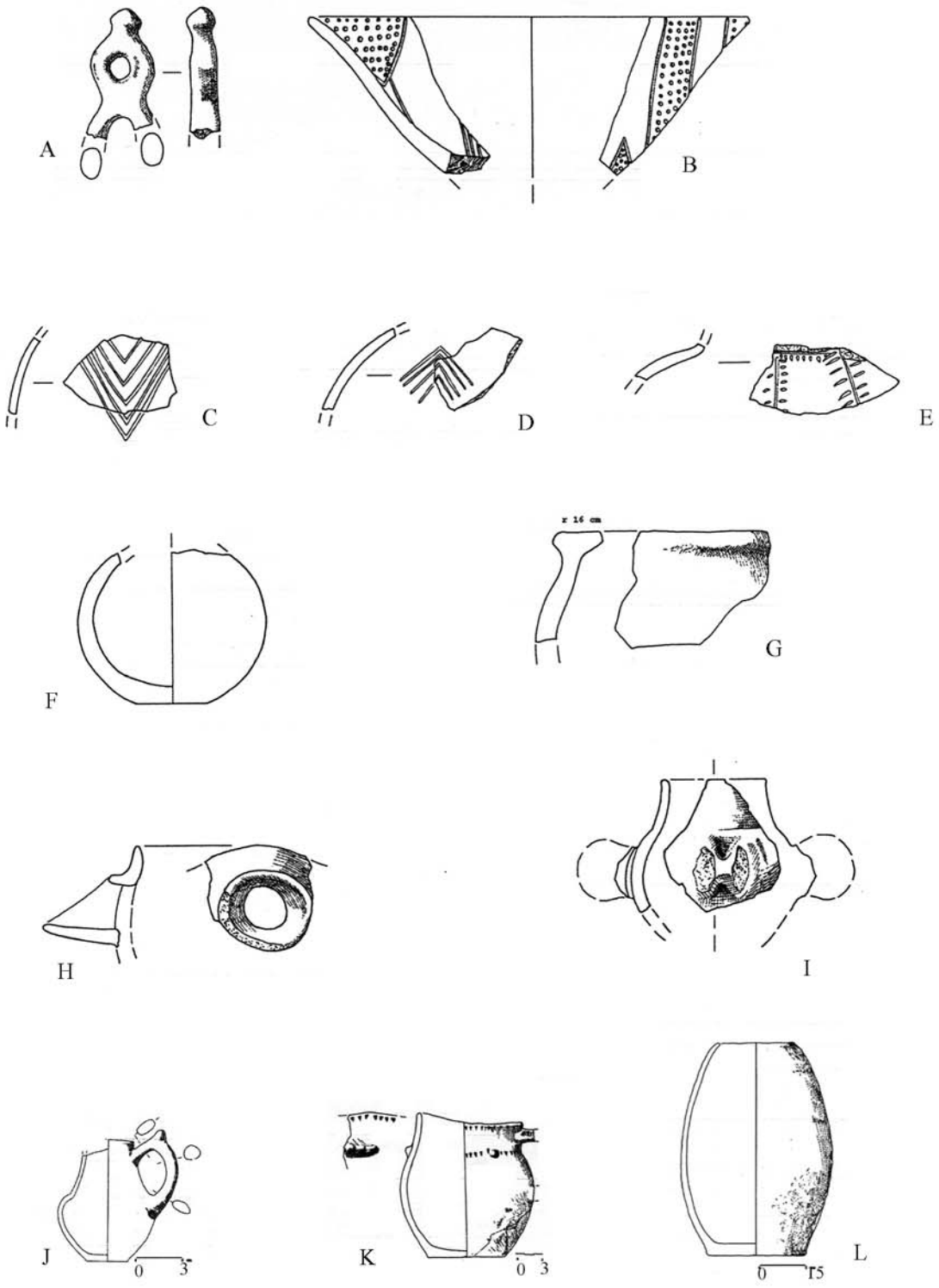
AFig. 5.8.1 General profile and house plans, Gudgova tell
Source: Leshtakov et al. 2001 - A; Leshtakov 1995 - B



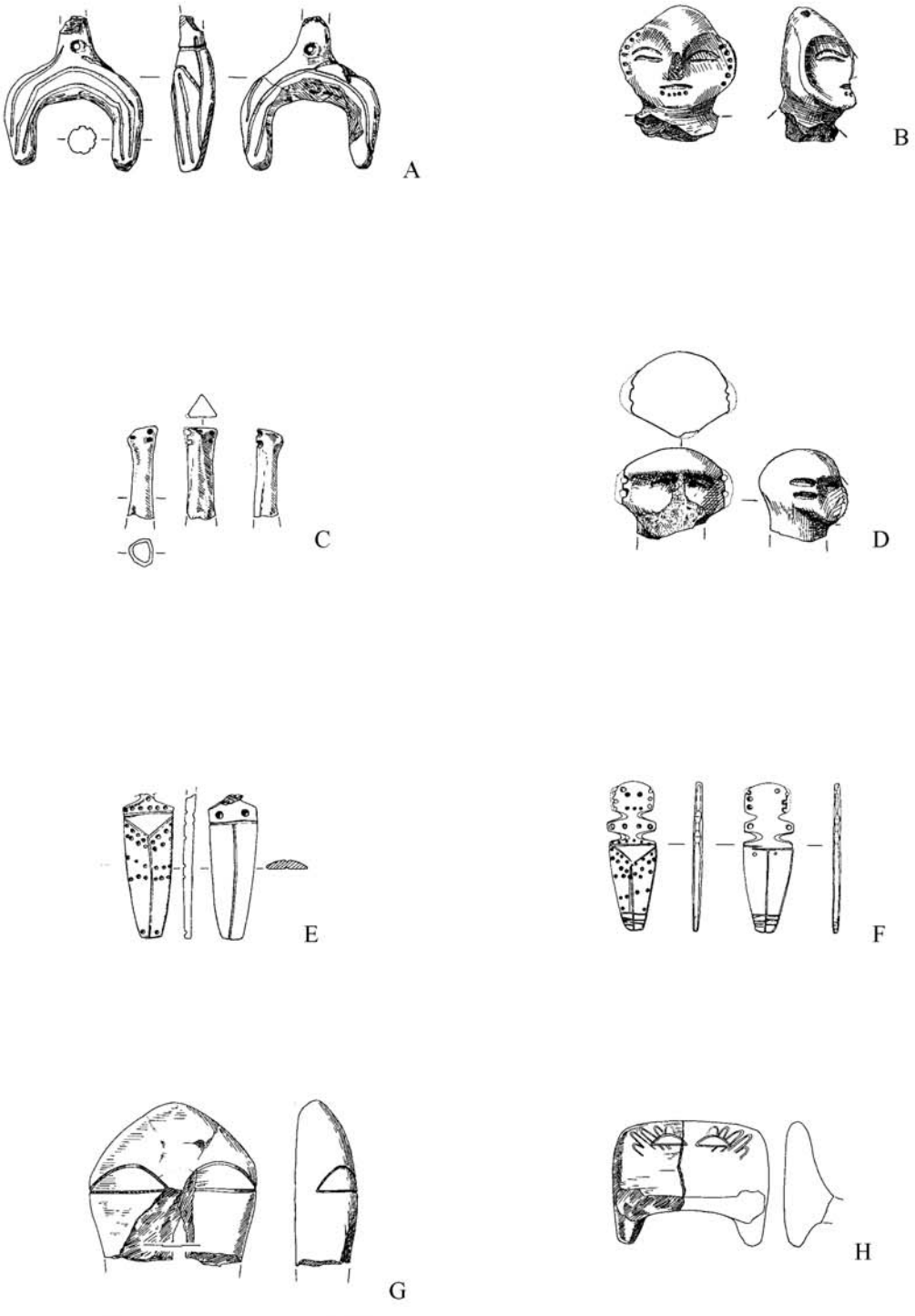
AFig. 5.8.2 Plans and profile from Gudgova tell
Source: Leshtakov et al. 2001 M 1 : 20



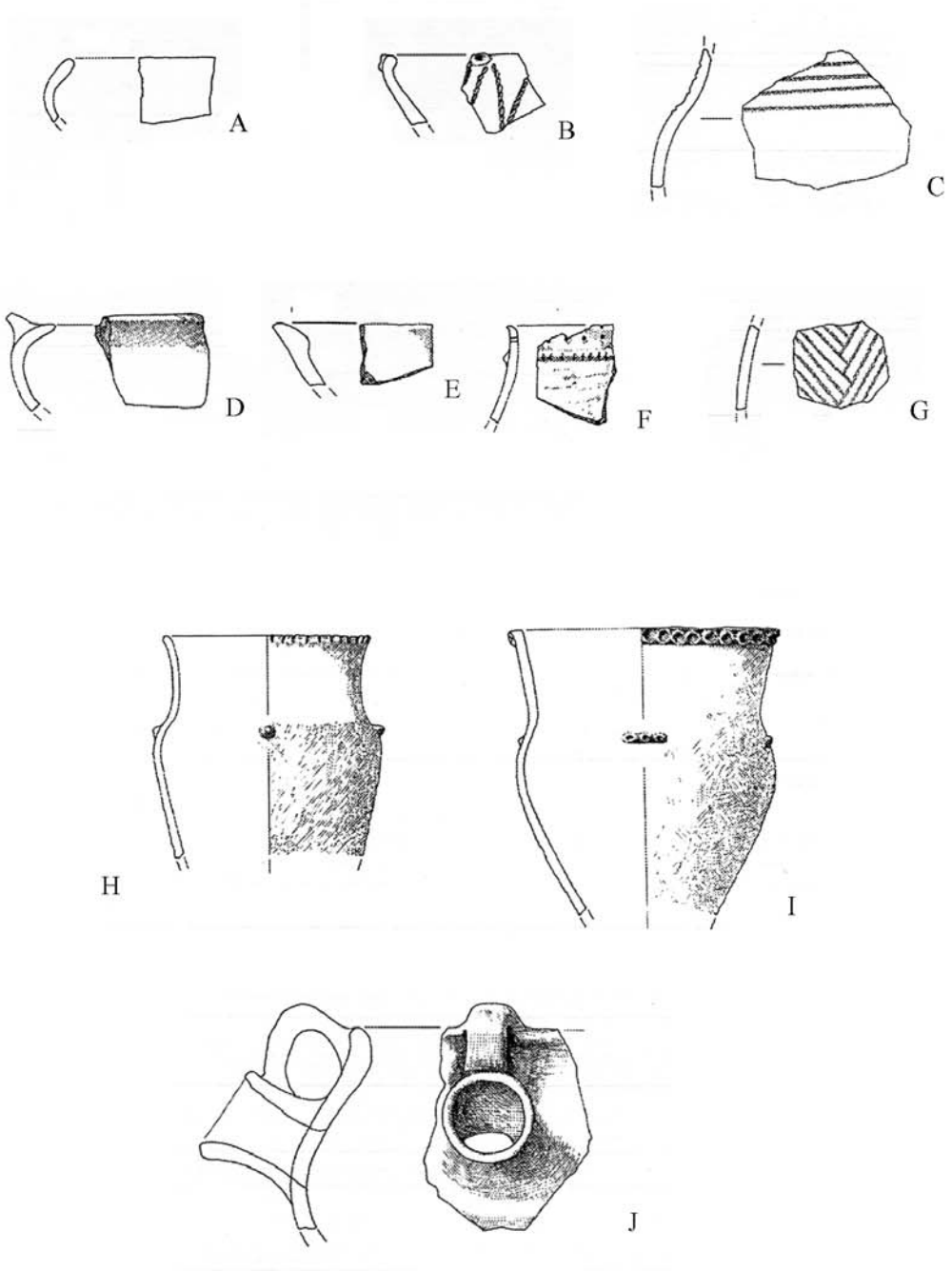
AFig. 5.8.3 LCA and EBA vessels from Gudgova tell
LCA - (A, B); EBA - (C - J)
Source: Leshtakov et al. 2001 M 1 : 15 (A); 1:10 (B); 1 : 12 (F); 1 : 6 (H); 1 : 5 (I)



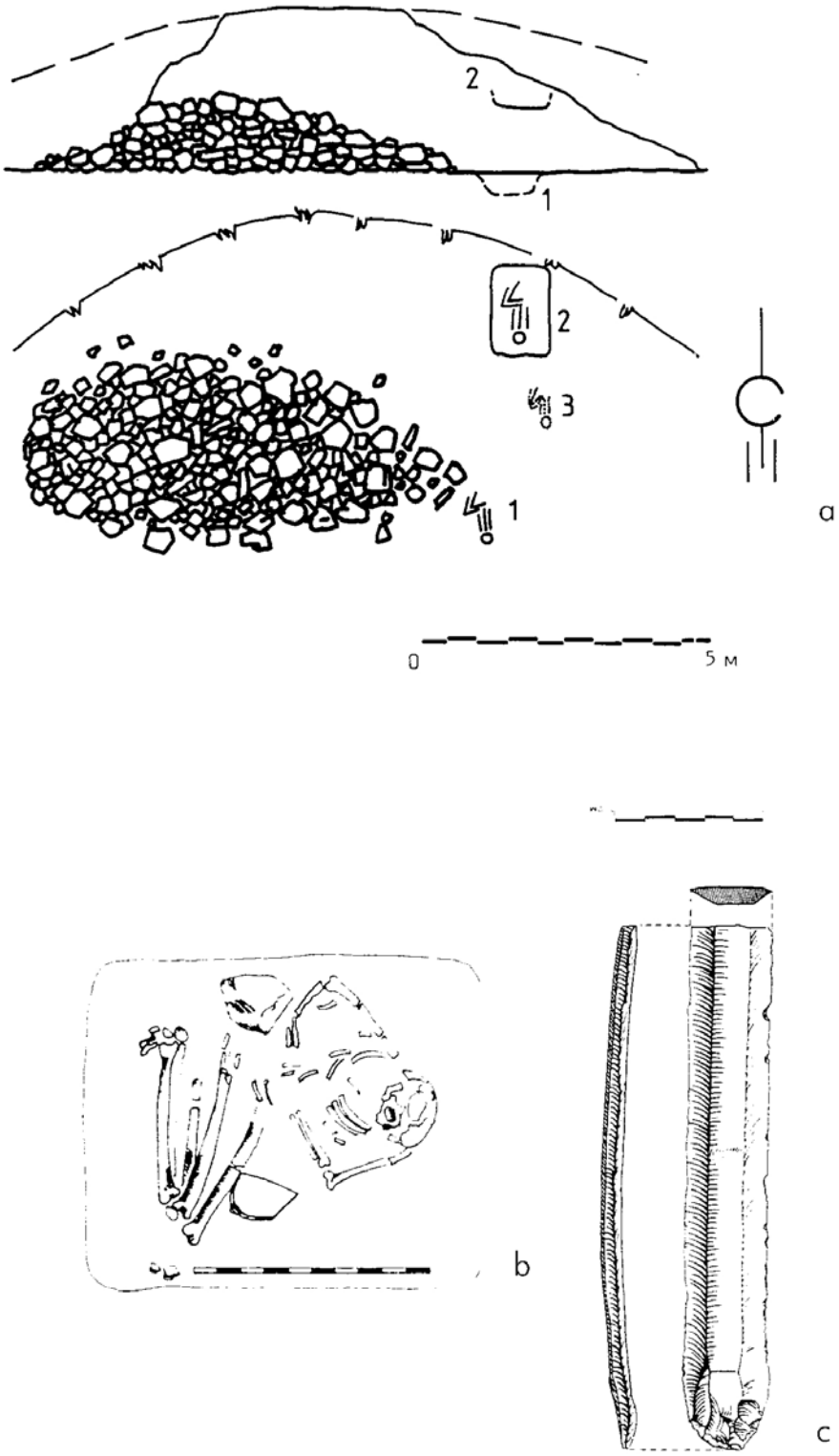
AFig. 5. 8. 4 BA vessels and sherds from Gudgova tell
Source: Leshtakov et al. 2001 M 1 : 3 (A - I)



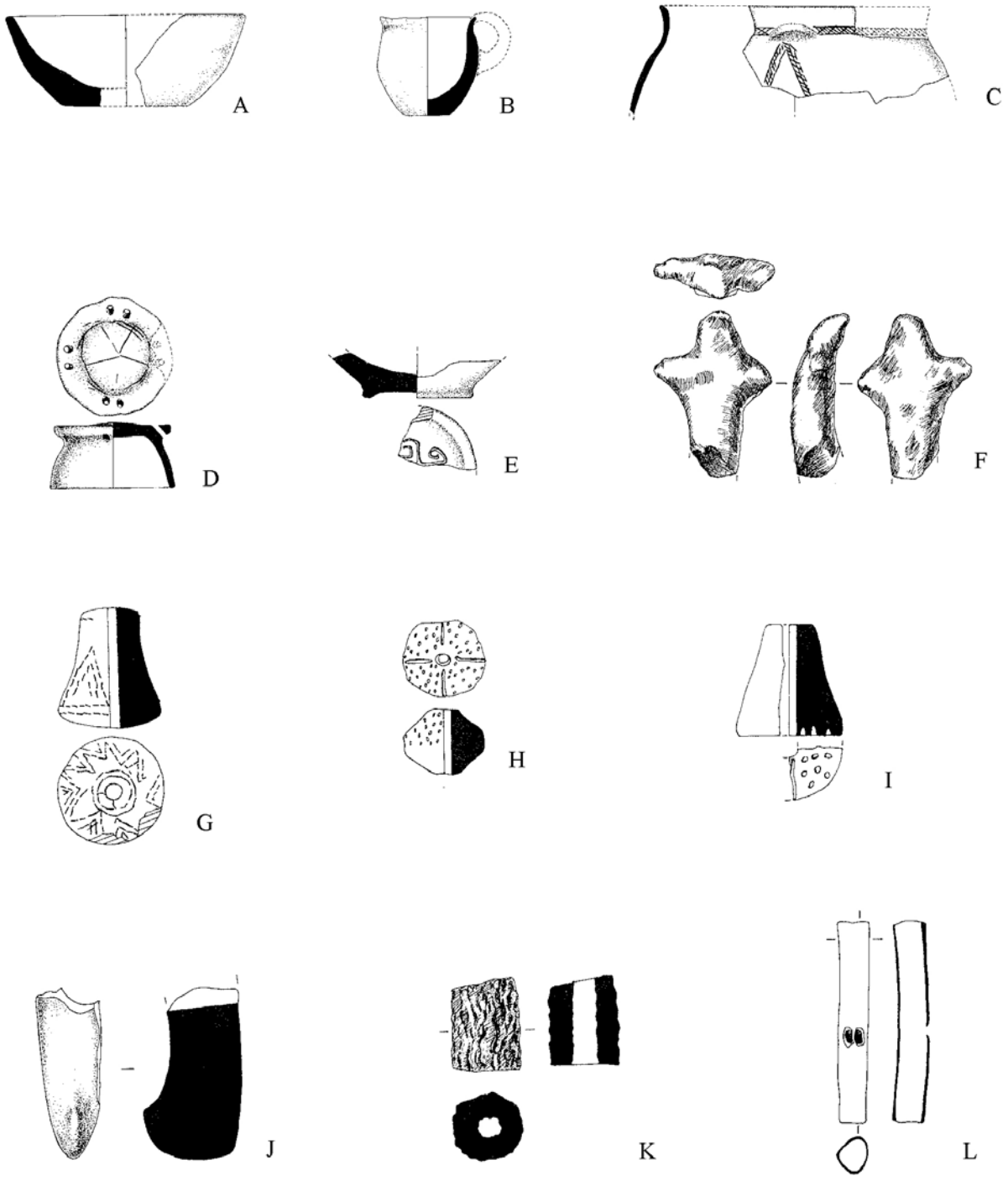
AFig. 5.8.5 Figurines and cult objects from Gudgova tell
Clay (A, B, D, G, H); bone (C, E, F) M 1 : 4 (A, C, E - H); 1 : 3 (B, D)
Source: Leshtakov et al. 2001



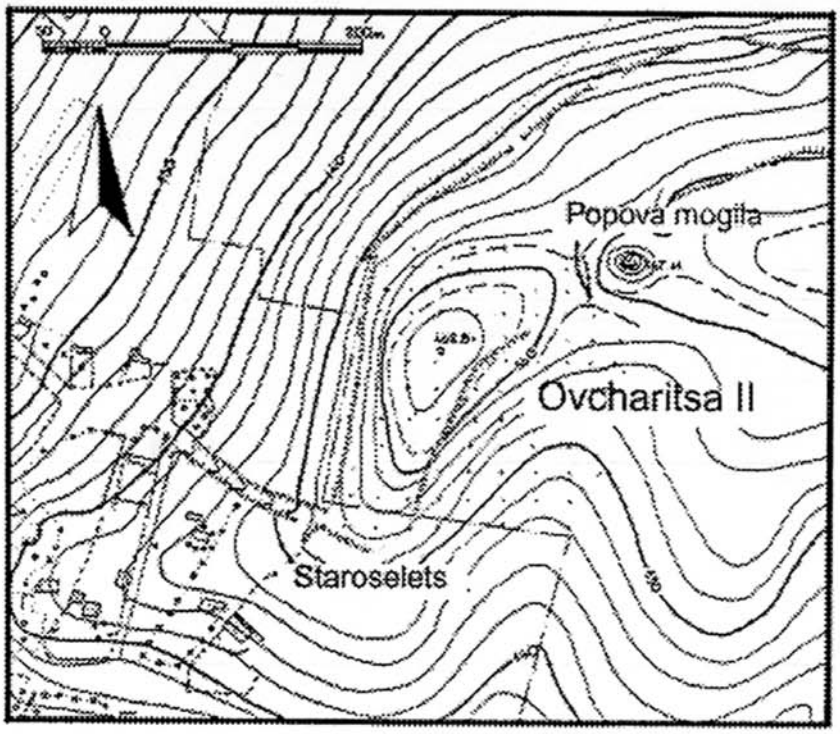
AFig. 5.10.1 BA pottery from Polski Gradets pit site (H-J) and Polski Gradets tell (A-G)
Source: Leshtakov et al. 2001 M 1 : 3 (A - G, J); 1 : 10 (H - I)



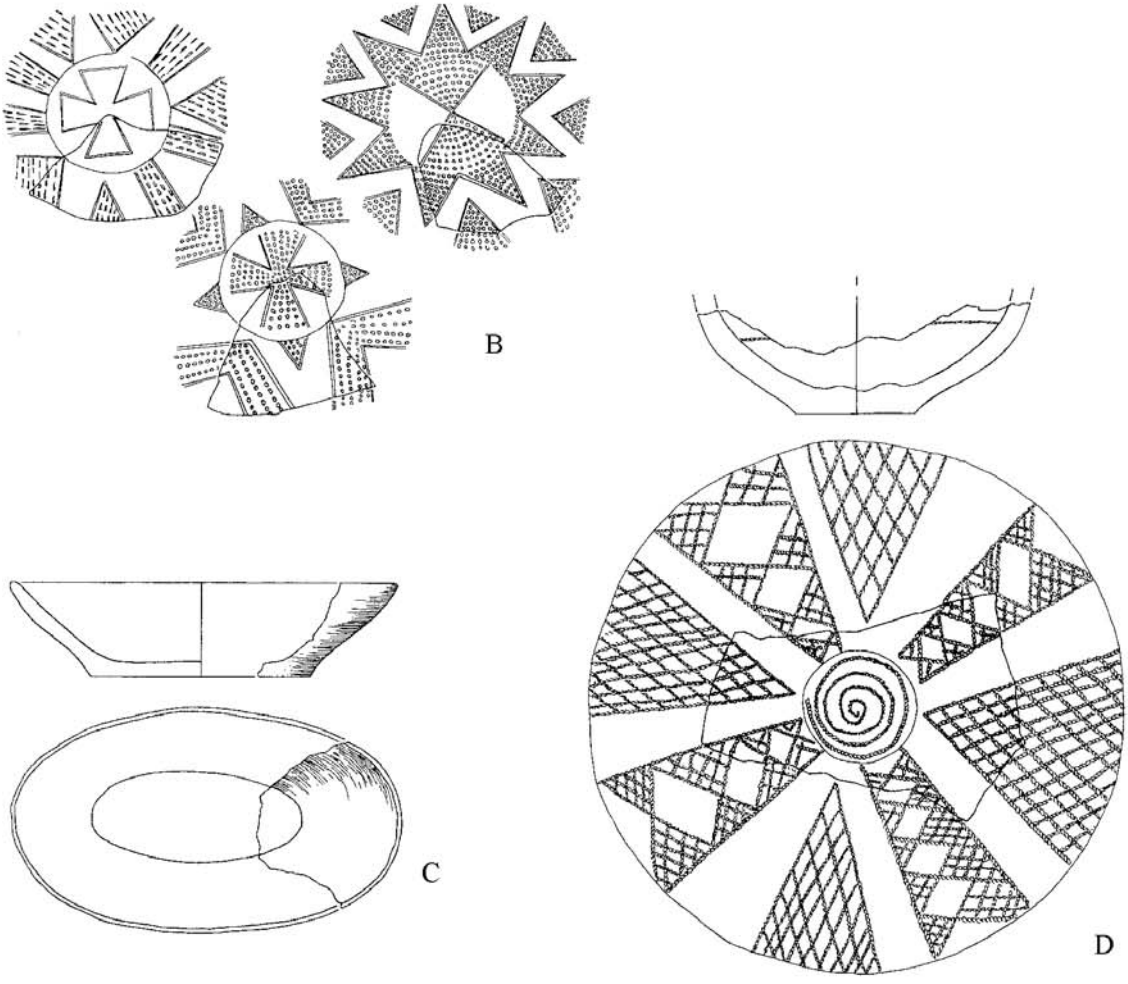
AFig. 6.1.1 Plan of Gonova mogila - (a), grave 2 - (b), the obsidian blade from grave 1 - (c)
Source: Kunchev 1991 M 1 : 2.5 (c)



AFig. 6.2.1 Pottery and artefacts from Ovcharitsa I flat site
Clay - (A - I), stone (J), antler (K), bone (L) M 1 : 3 (A -C); 1 : 2.5 (D - L)
Source: Leshtakov et al. 2001



A

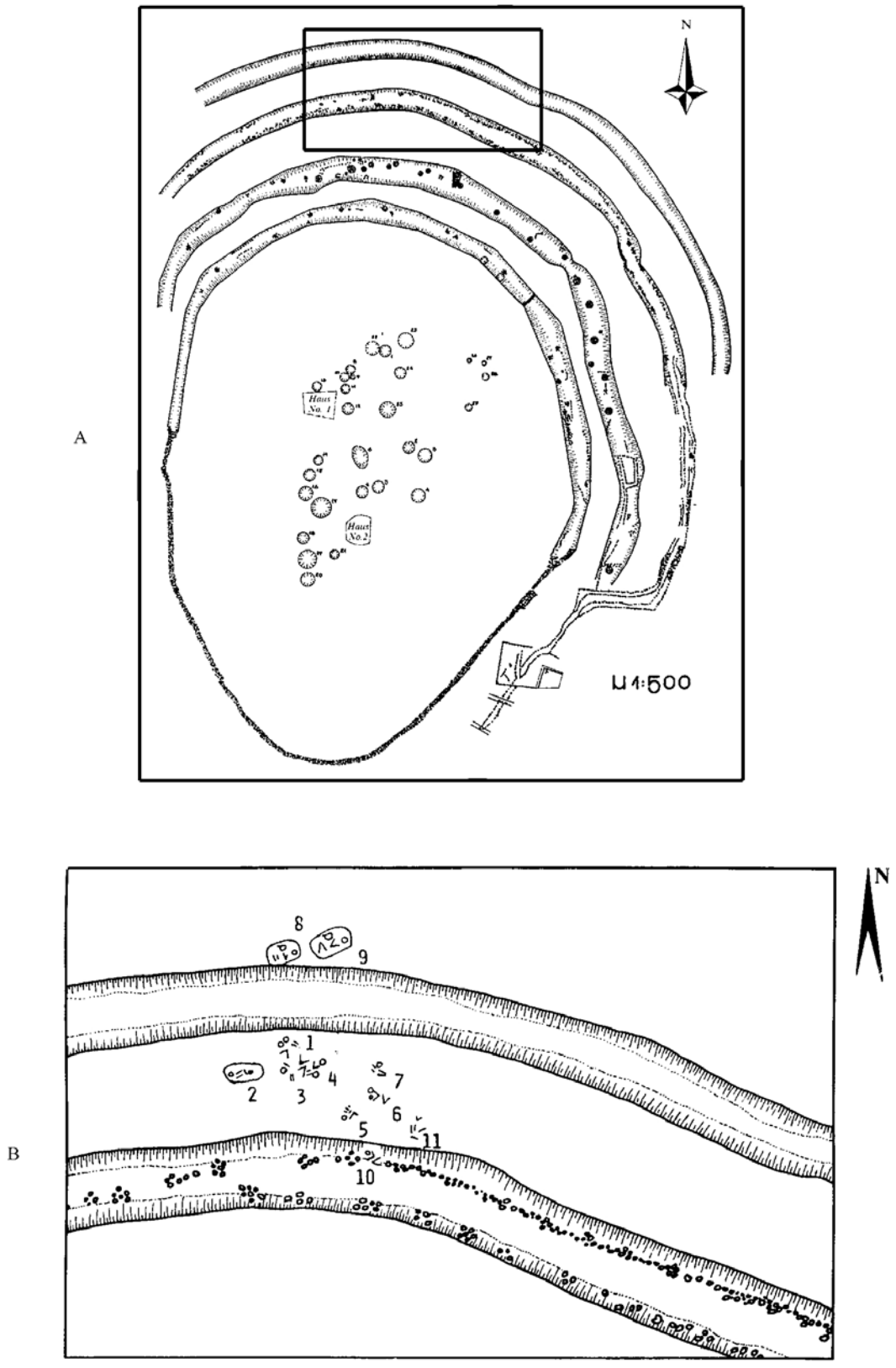


B

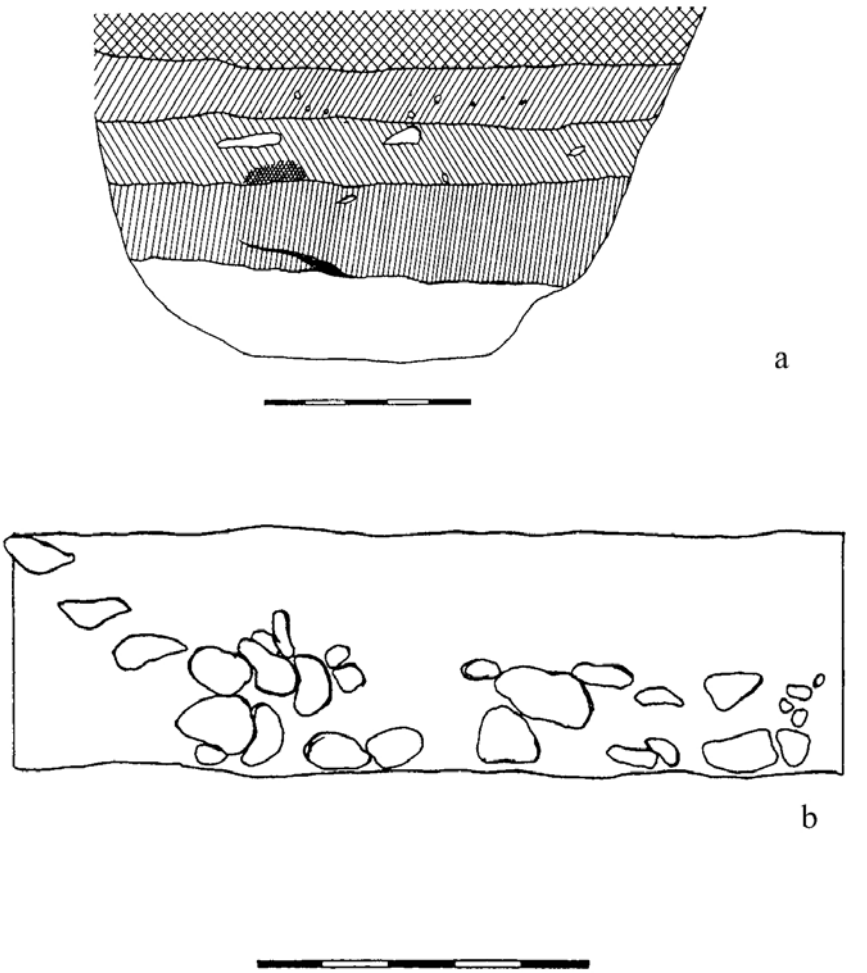
C

D

AFig. 6.3.1 General location of Ovcharitsa II enclosure; pottery from the site
Source: Leshtakov et al. 2001 M 1 : 2.5 (B, D); 1 : 3.5 (C)

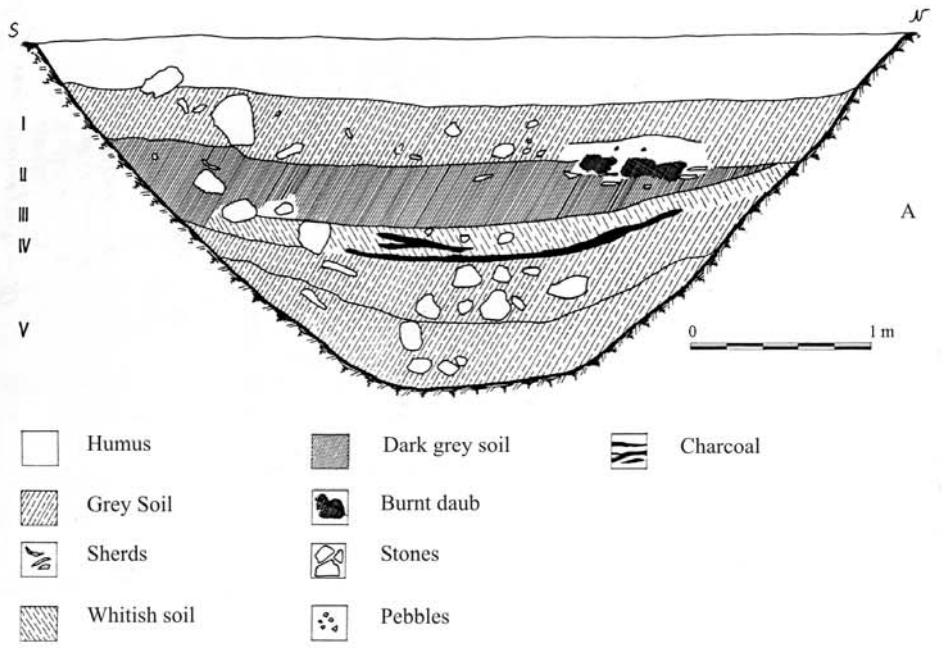


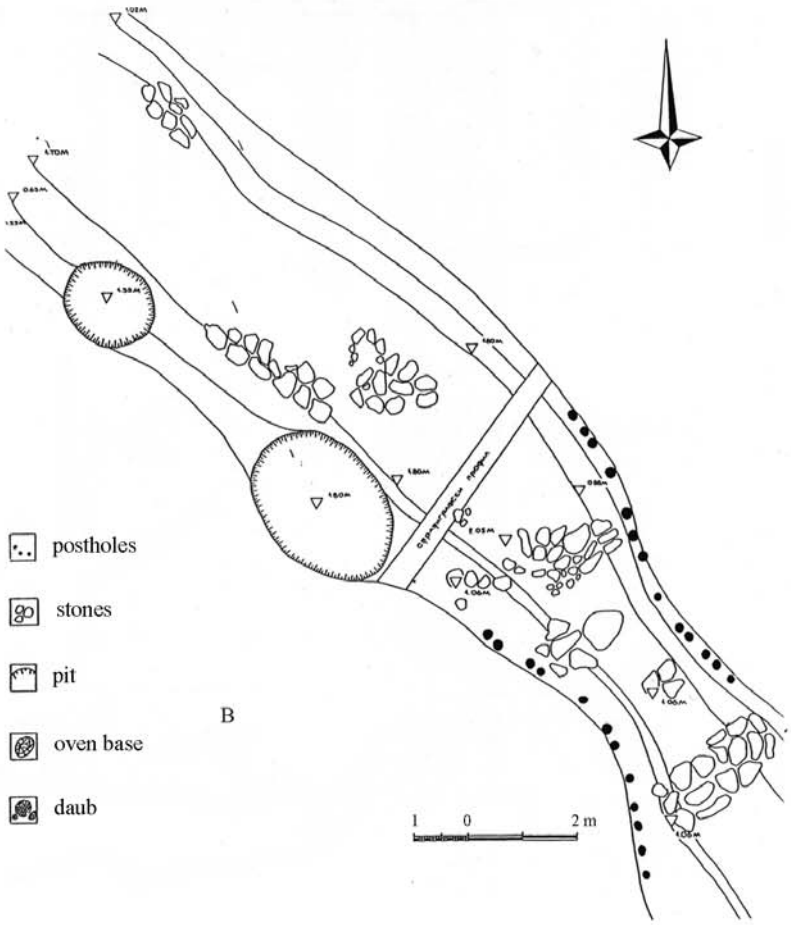
AFig. 6.3.2 Plan of EBA enclosure and the LBA cemetery in Ovcharitsa II site
Source: Kancev and Kanceva-Russeva 1996 (A); Kuncheva-Russeva 2000 (B)



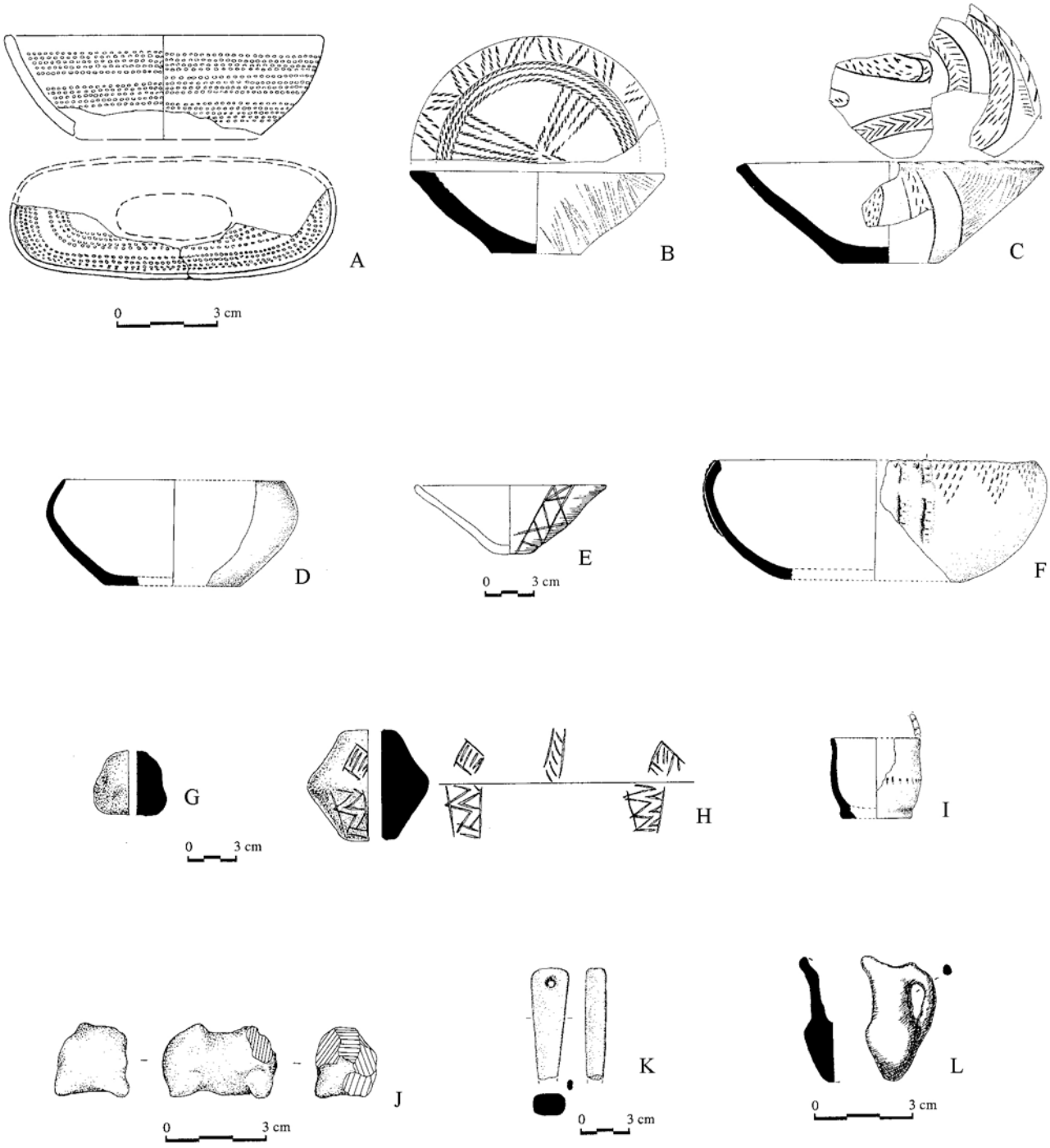
AFig. 6.3.3 Profiles of the ditch and the stone wall from Ovcharistsa II; key for the illustrations from Ovcharitsa II

Source: Kancev and Kanceva-Russeva 1996

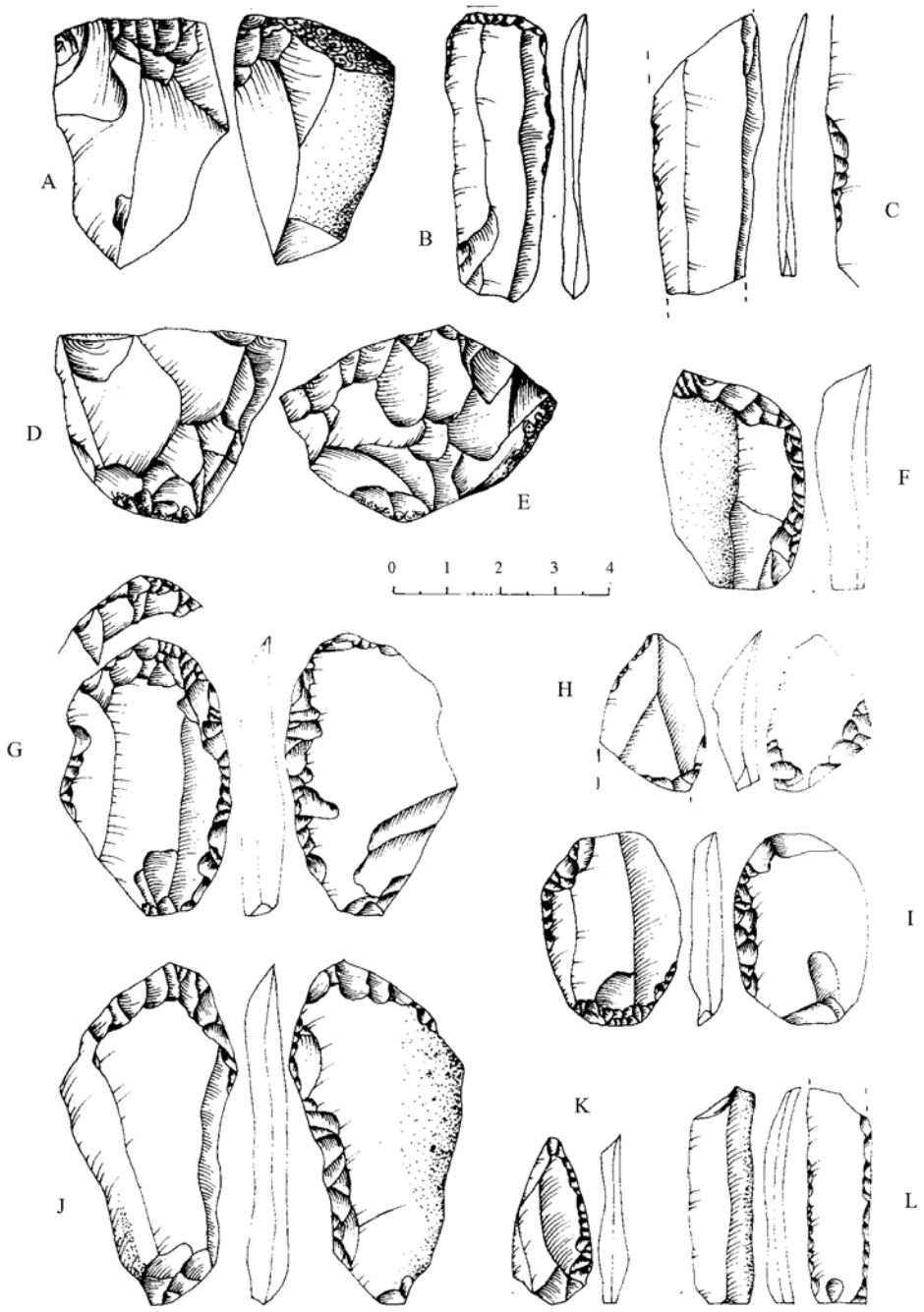




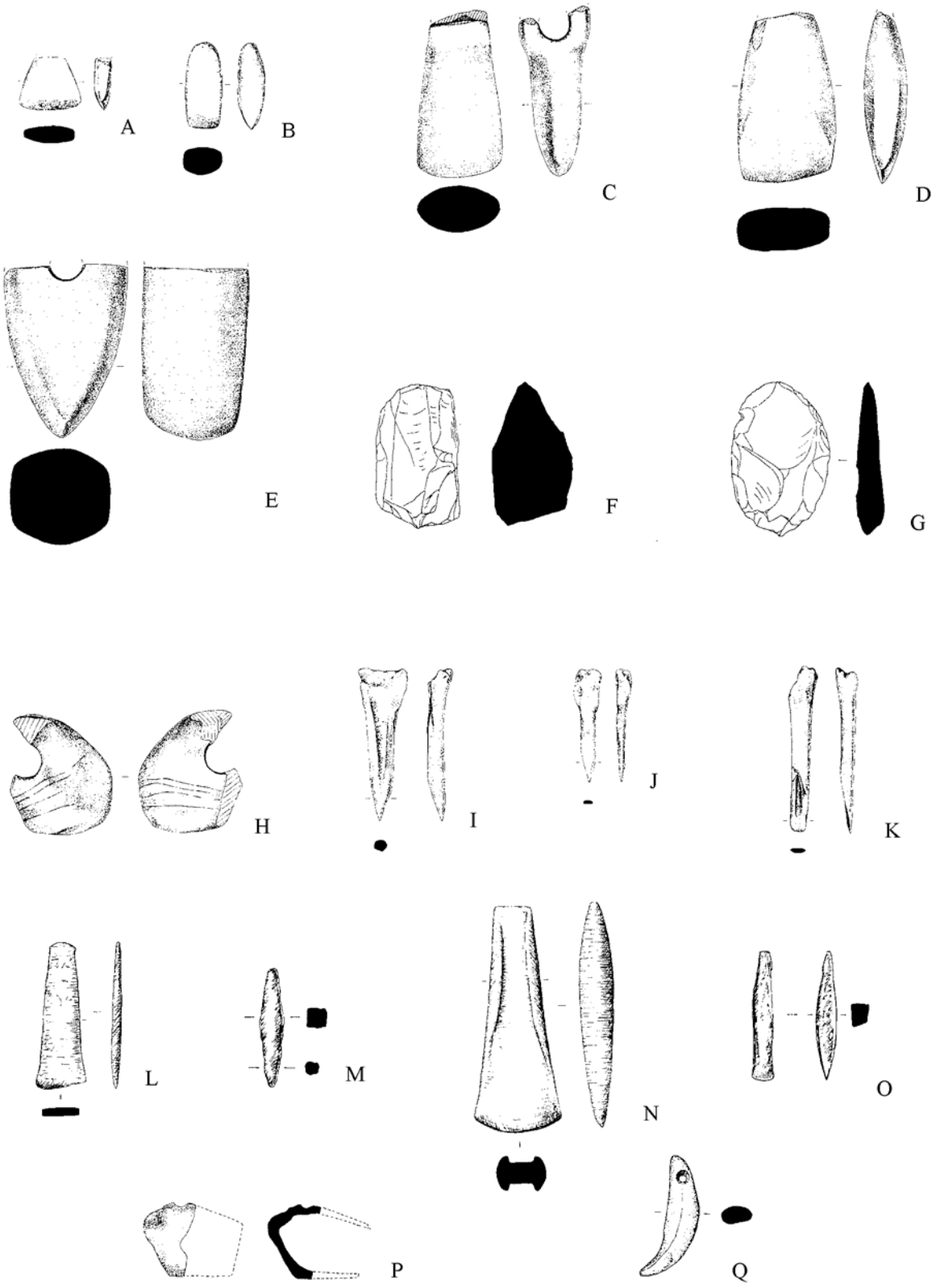
AFig. 6.3.4 Profile and plan of the "chain dwellings" at Ovcharitsa II
Source: Kancev and Kanceva-Russeva 1996



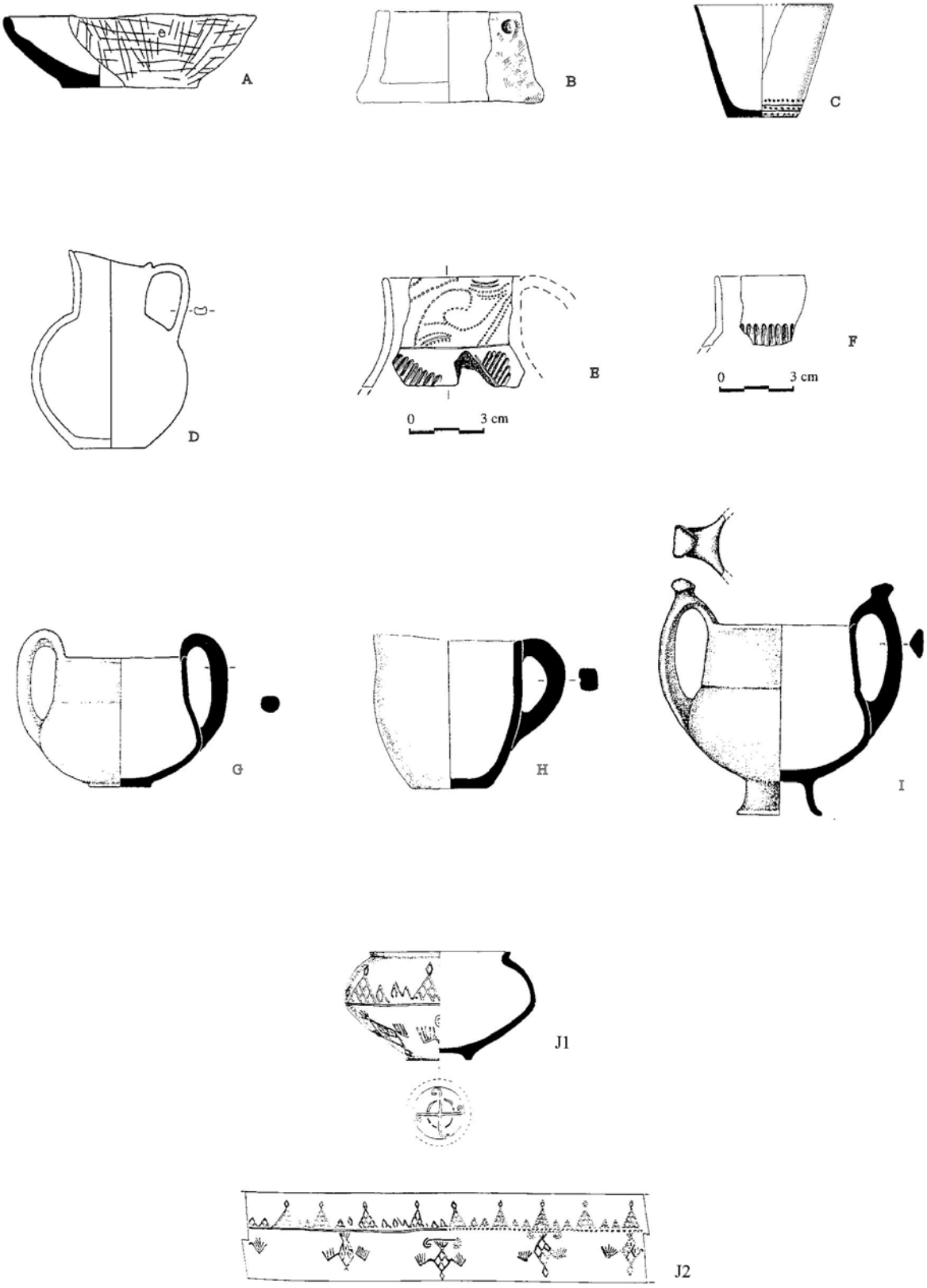
AFig. 6.3.5 Pottery and artefacts from Ovcharitsa II enclosure
Clay (A - J), bronze (L), stone (K)
Source: Leshtakov et al. 2001



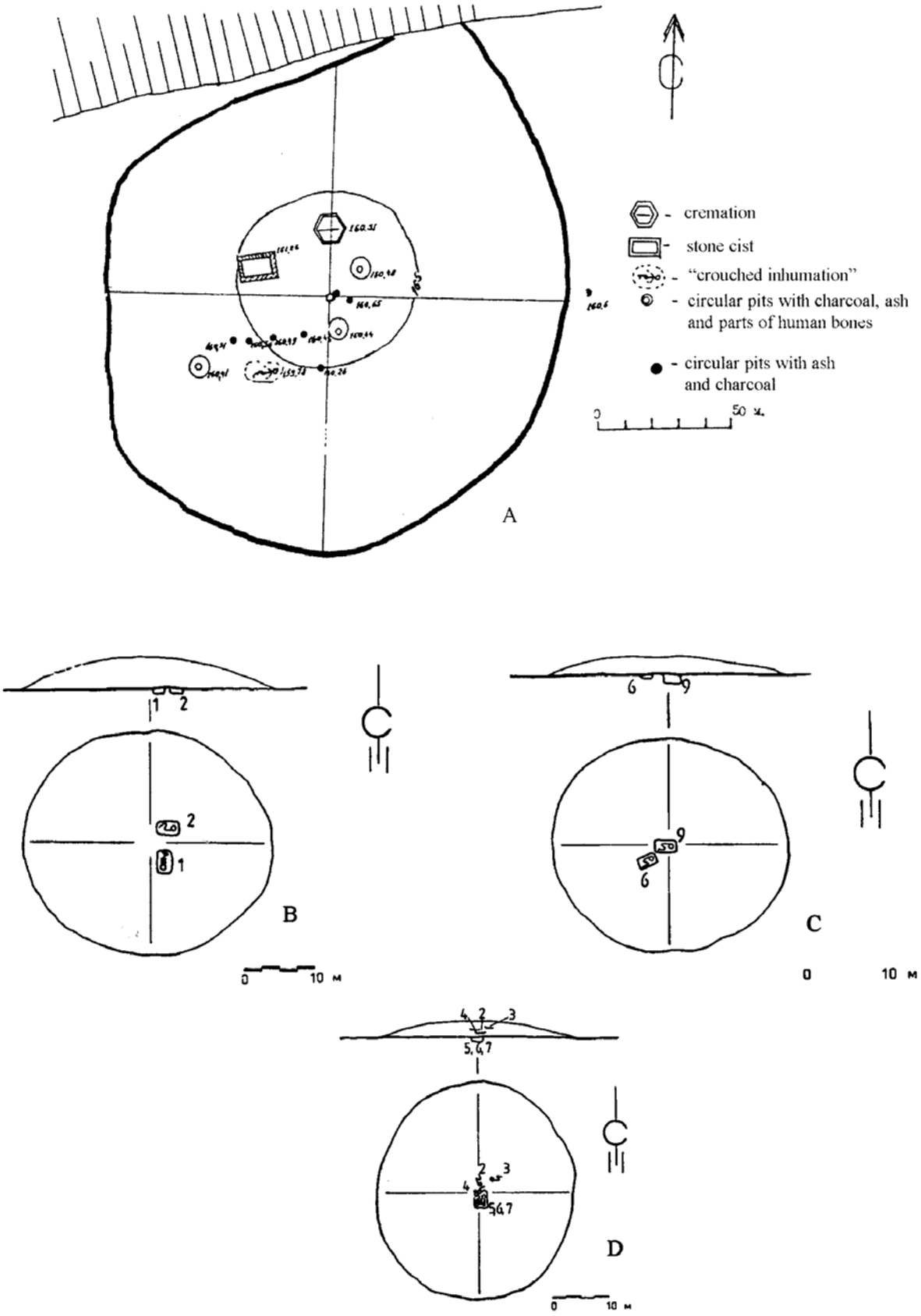
AFig. 6.3.6 Flint artefacts from Ovcharitsa II enclosure
Source: Zlateva-Uzunova 2003



AFig. 6.3.7 Various artefacts from Ovcharitsa II enclosure
Stone (A-E), flint (F, G), bone and antler (H-K), metal (L-O), clay (P, Q)
Source: Leshtakov et al. 2001 M 1 : 4 (A - P); 1 : 2 (Q)

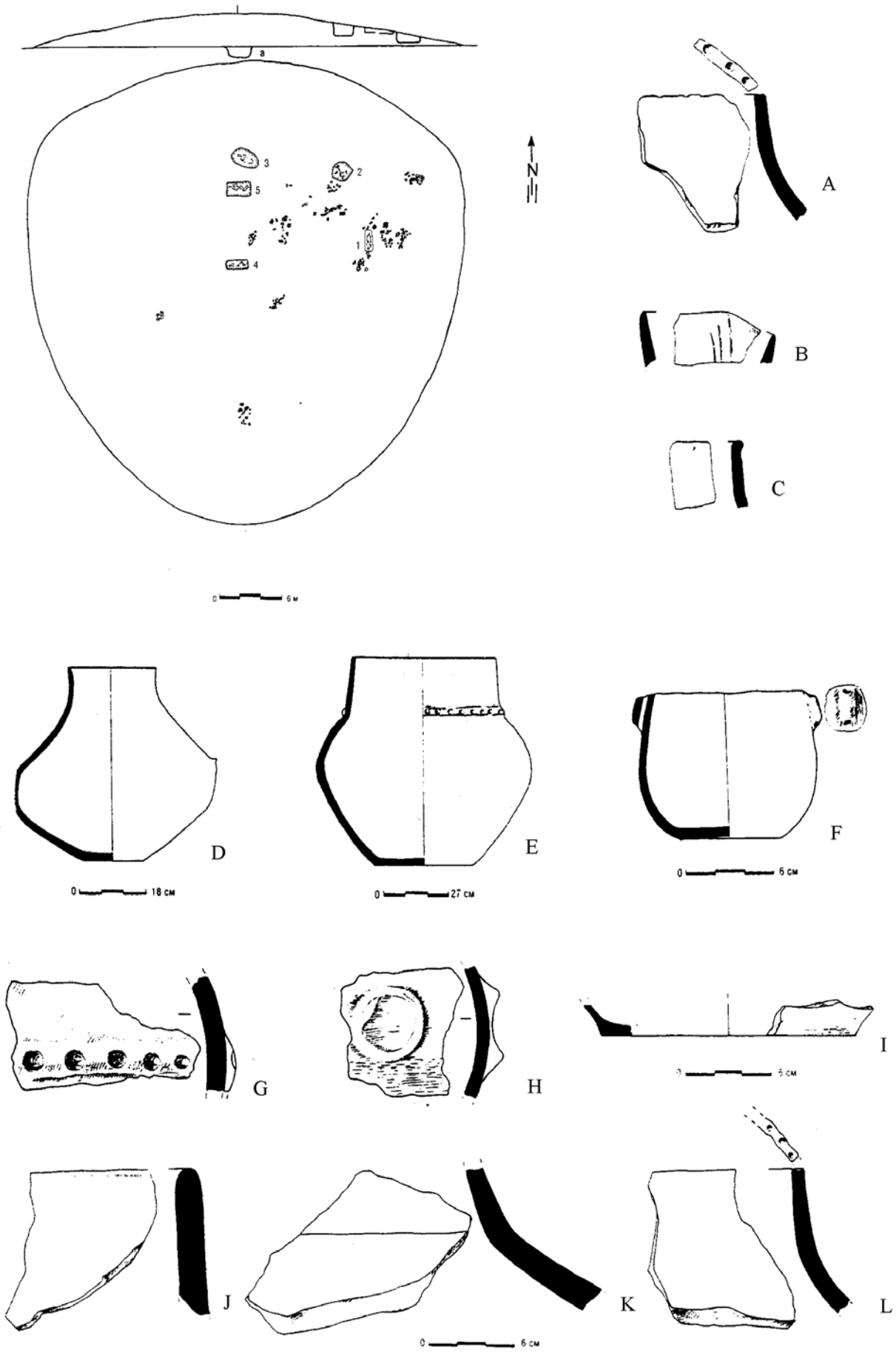


AFig. 6.3.8 Pottery from Ovcharitsa II enclosure
EBA pottery (A - F), LBA pottery (G - J) M 1 : 4 (G - I, J2); 1 : 5 (J1)
Source: Leshtakov et al. 2001 (A-F), Kuncheva-Russeva 2000 (G-J)

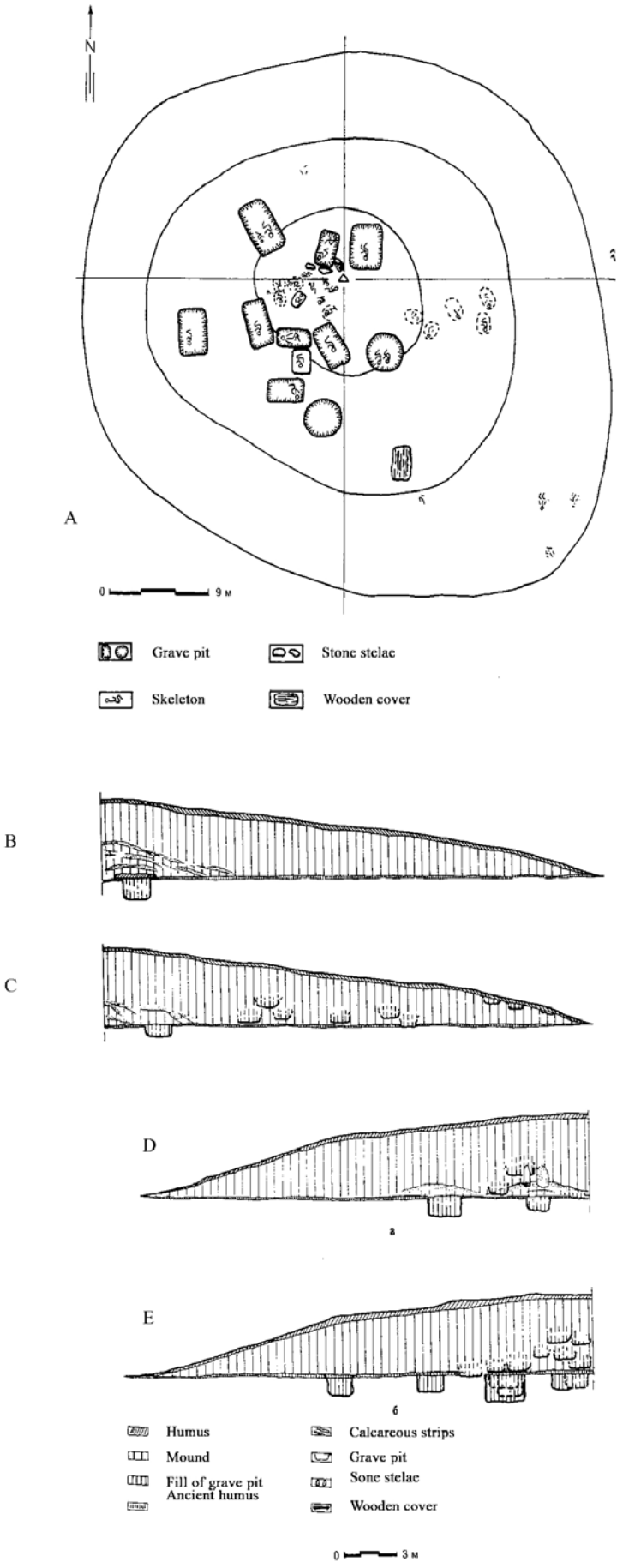


AFig. 6.4.1 Plans of barrows: A) Ovchartsi barrow, B) Aldinova barrow, C) Taniokoleva barrow, D) Kurdova barrow

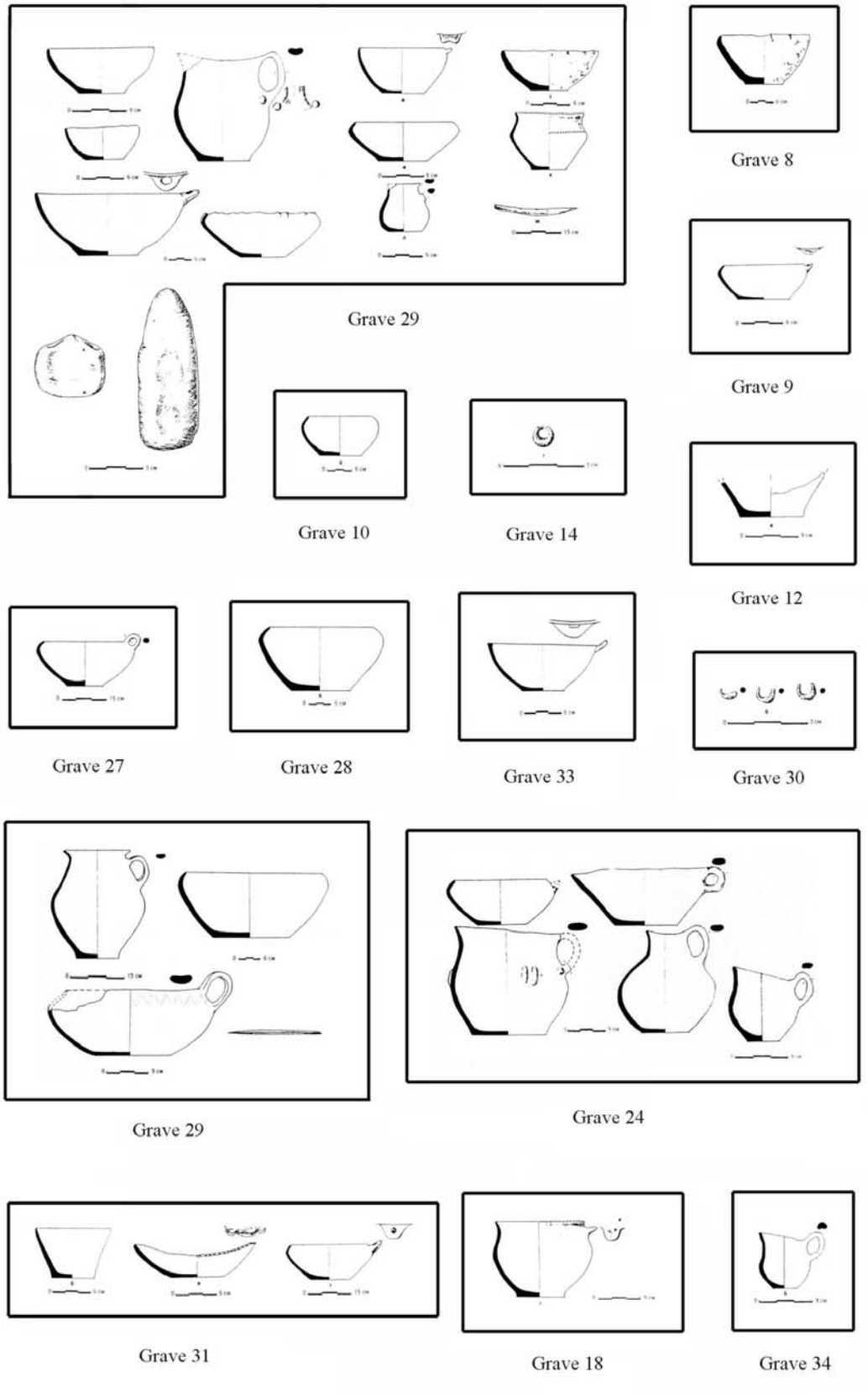
Source: Kalchev 1993 (A), Kunchev 1991 (B-D)



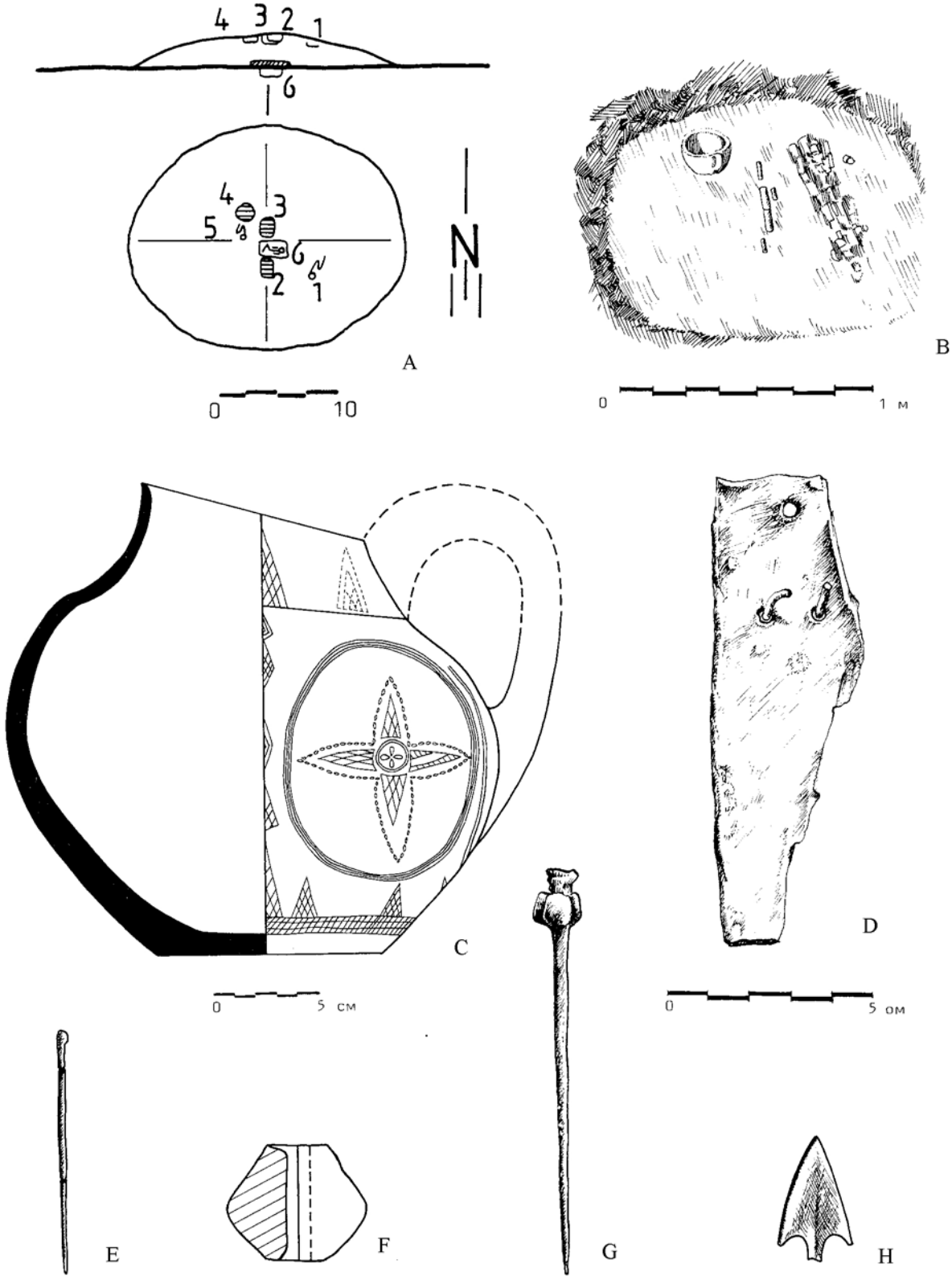
AFig. 6.6.1 Plan of Barrow 4; pottery from the features
Feature 1 (D, E); Feature 3 (F-I); Feature 7 (A-C); Feature 9 (J-L)
Source : Leshtakov and Borisov 1995



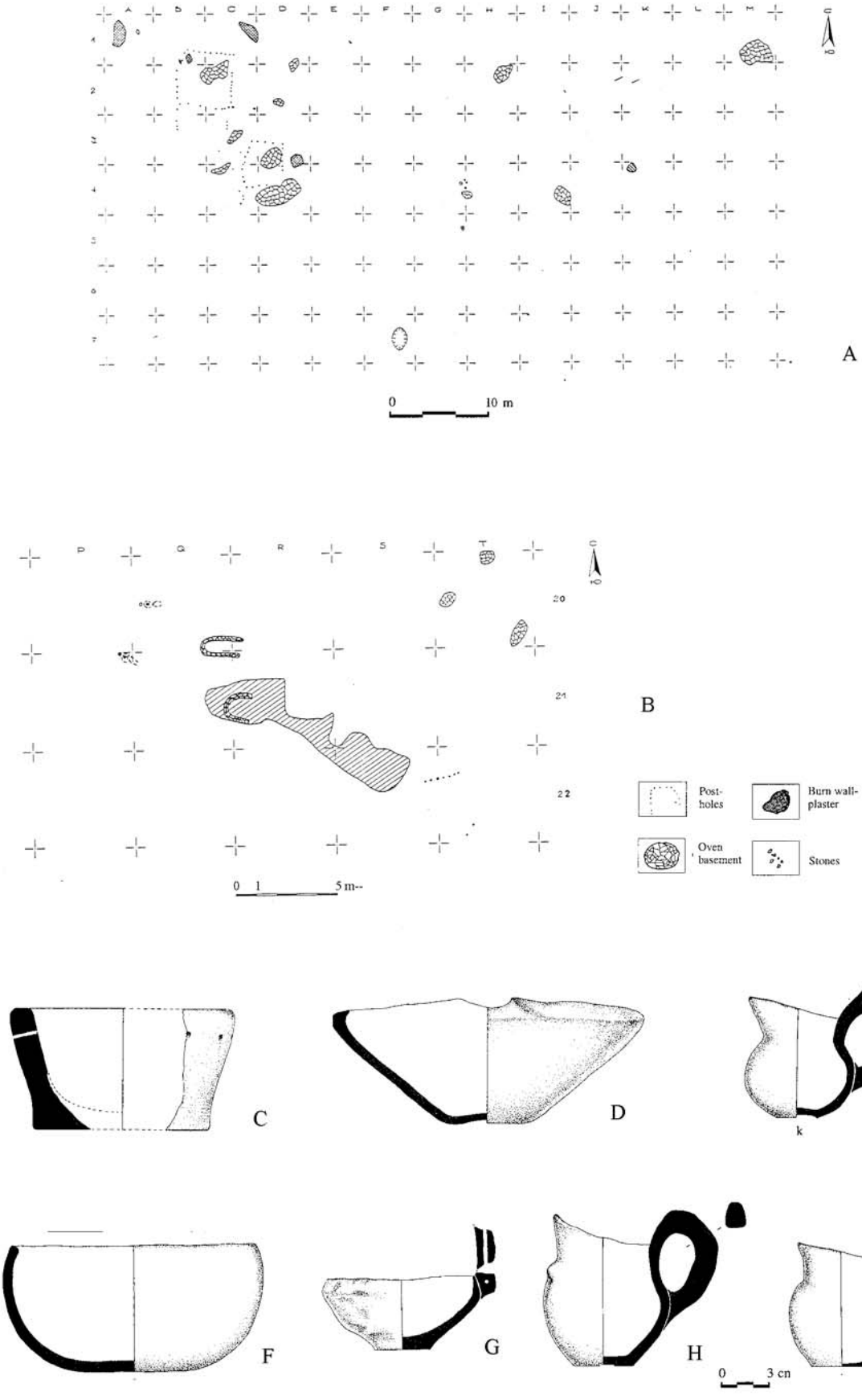
AFig. 6.7.1 General plans and profiles of Goliamata mogila
Source: Kunchev 1995



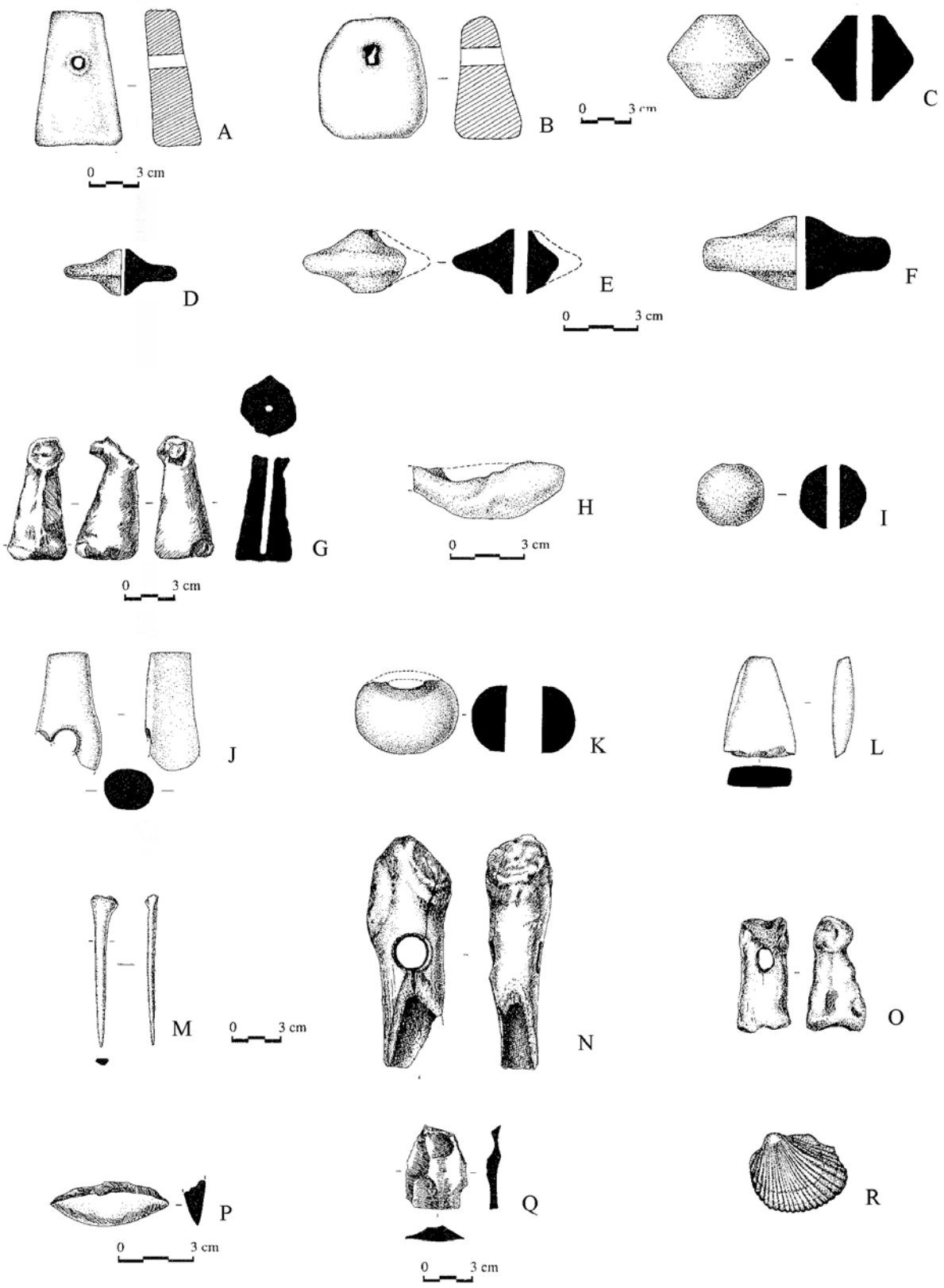
AFig. 6.7.2. Grave goods from Goliamata mogila
Source: Kunchev 1995



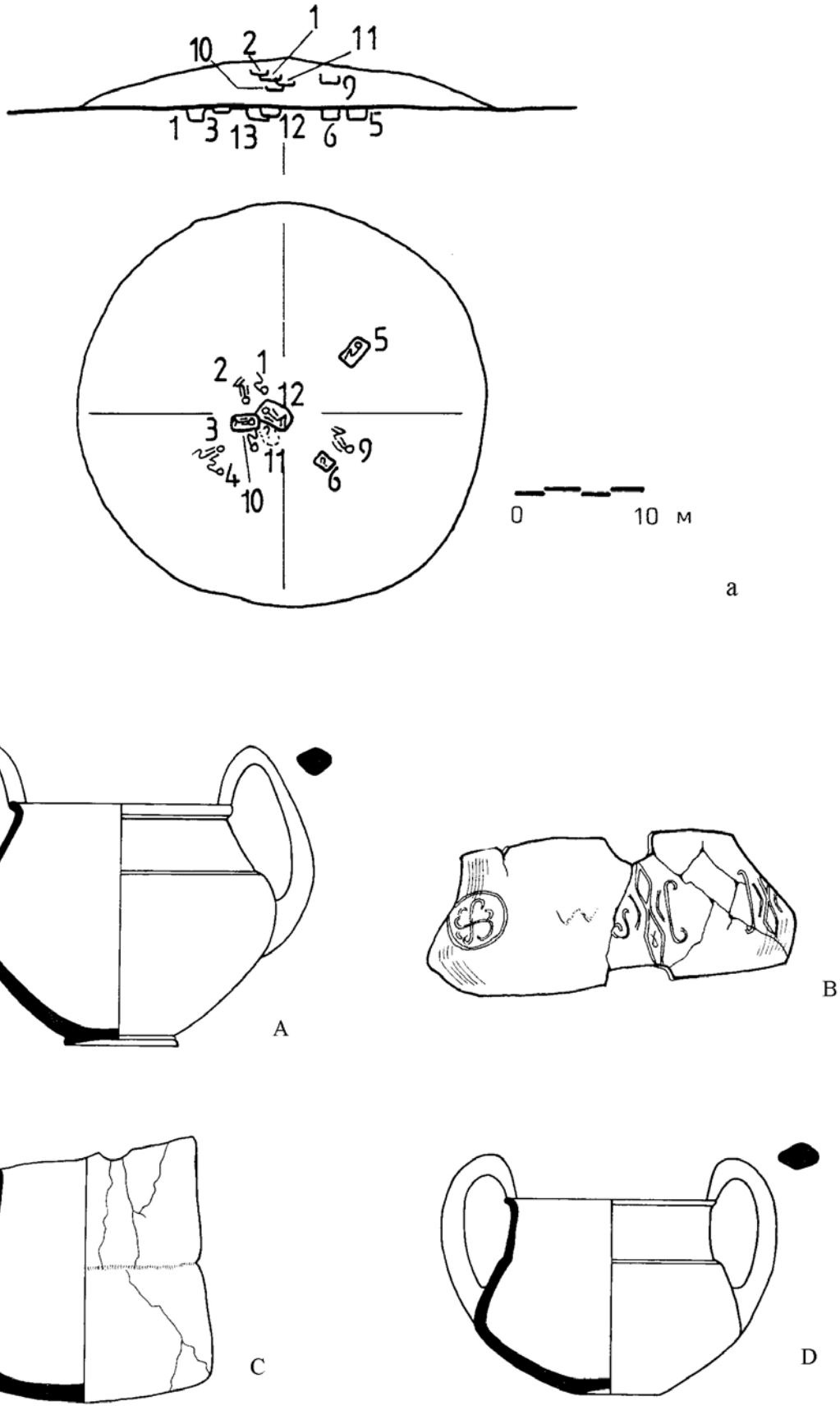
AFig. 6.8.1 Plan, grave goods and grave 5 of Malkata mogila
Fragment of bronze sword from grave 1 (D); grave 5 (B); a hair pin, unknown object and spindle whorl from grave 2 (E-G); clay jug and bronze arrowhead from grave 3 (C, H)
Source: Kunchev 1991



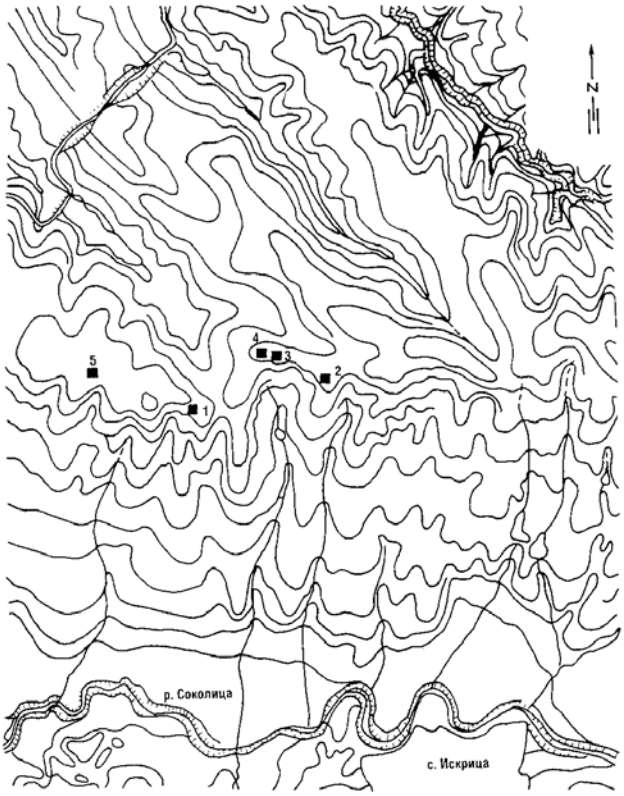
AFig. 6.9.1 General plan of Goliama Detelina flat site; pottery from the site
Source: Leshtakov et al. 2001



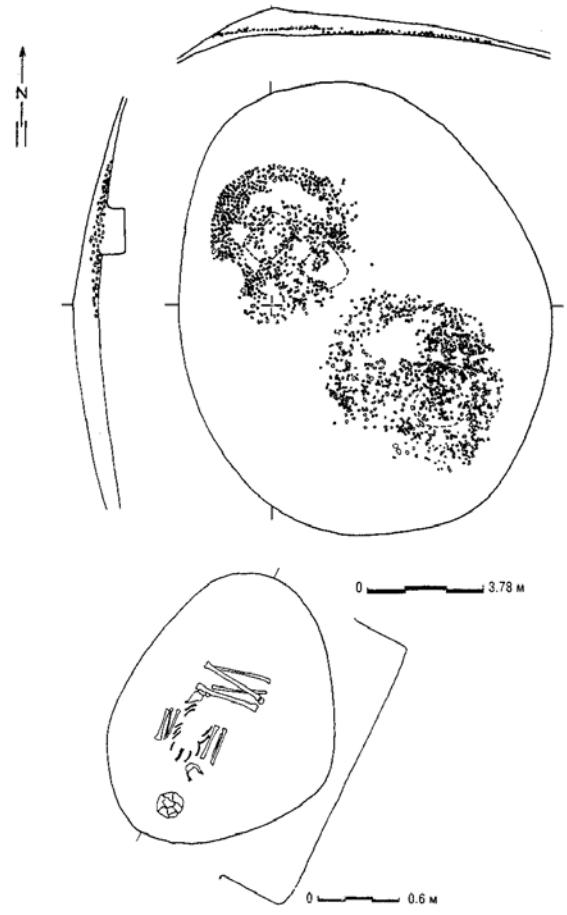
AFig. 6.9.2 Various artefacts from Goliama Detelina flat site
Clay (A-I), stone (J-L), bone and antler (M-O), bronze (P), flint (Q), shell (R)
Source: Leshtakov et al. 2001



AFig. 6.11.1 Plan and grave goods, Manchova mogila
Grave 1 (A); grave 2 (C); grave 4 (B); grave 5 (D)
Source: Kunchev 1991 M 1 : 3 (A - D)

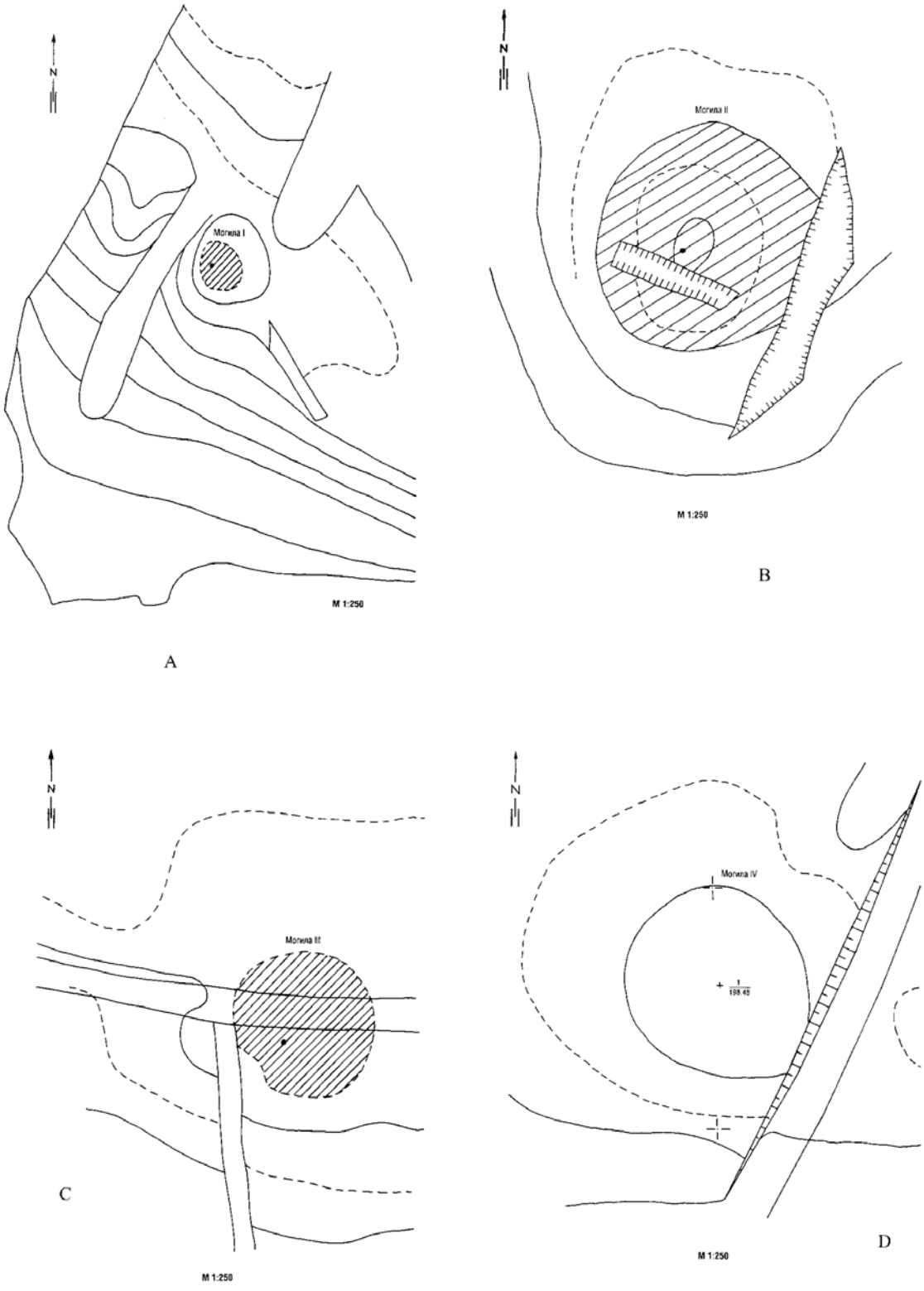


a

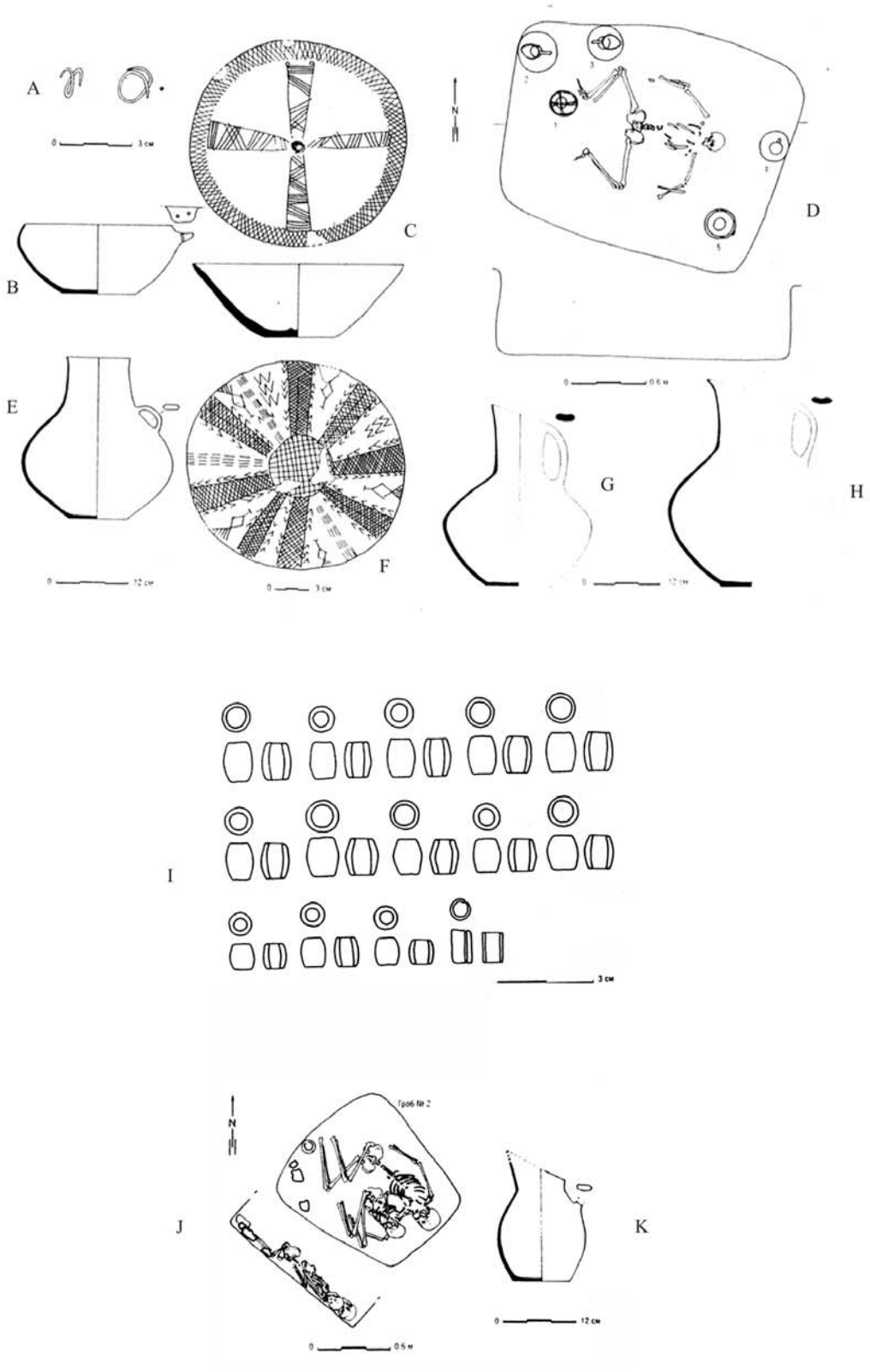


b

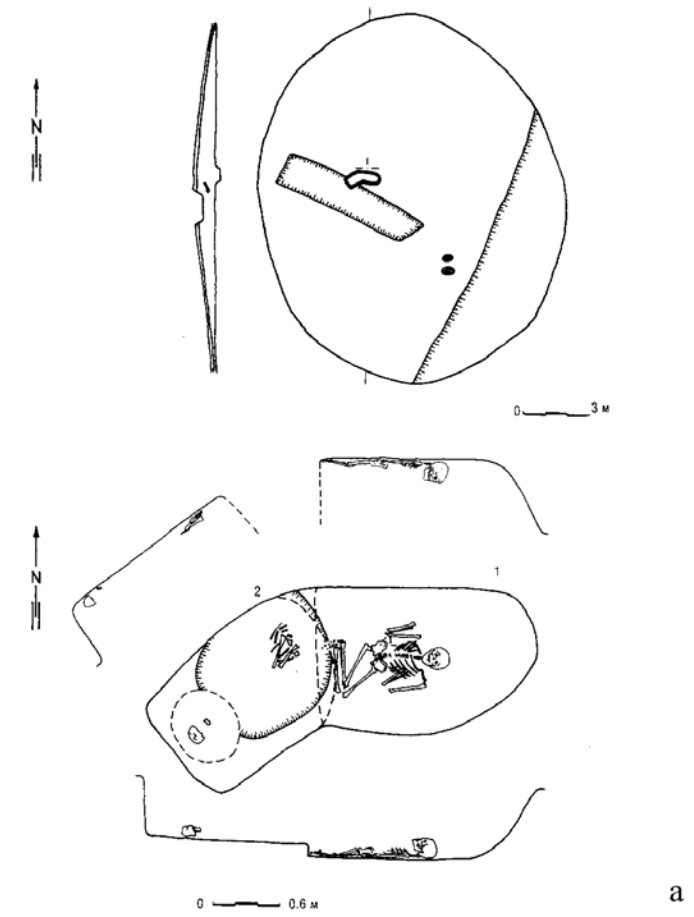
AFig. 6.14.1 General plan of MIBC (a); MIBC1 grave 1 (b)
Source: Panayotov and Alexandrov 1995



AFig. 6.14.2 Plans of MIBC: Barrow 1 (A); Barrow 2 (B); Barrow 3 (C); Barrow 4 (D)
Source: Panayotov and Alexandrov 1995



AFig. 6.14.3 Grave 2 from MIBC3 (A-H), grave 2 from MIBC1 (J-K), silver beads from grave 1 from MIBC4 (I)
Source: Panayotov and Alexandrov 1995



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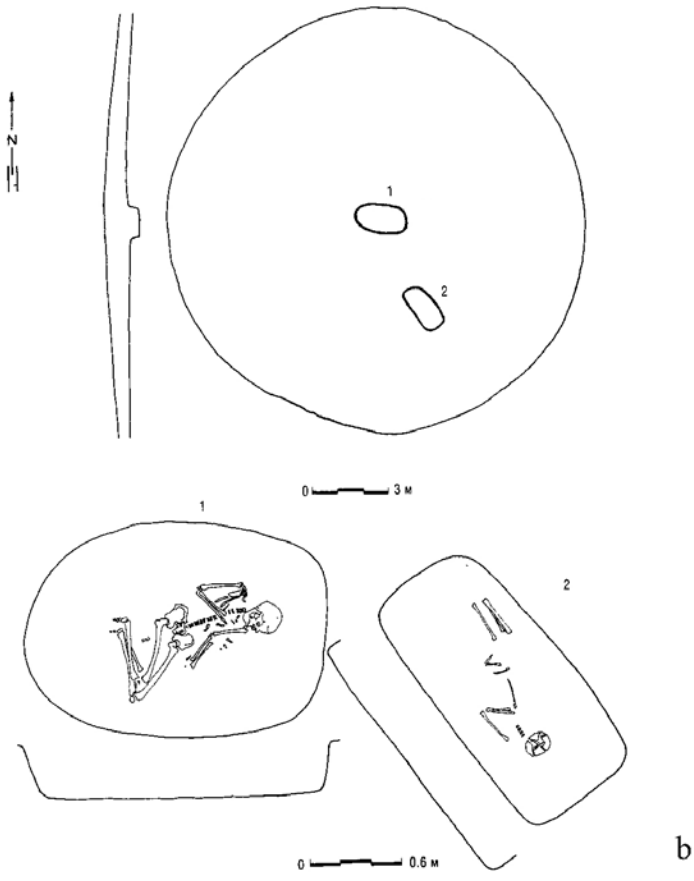
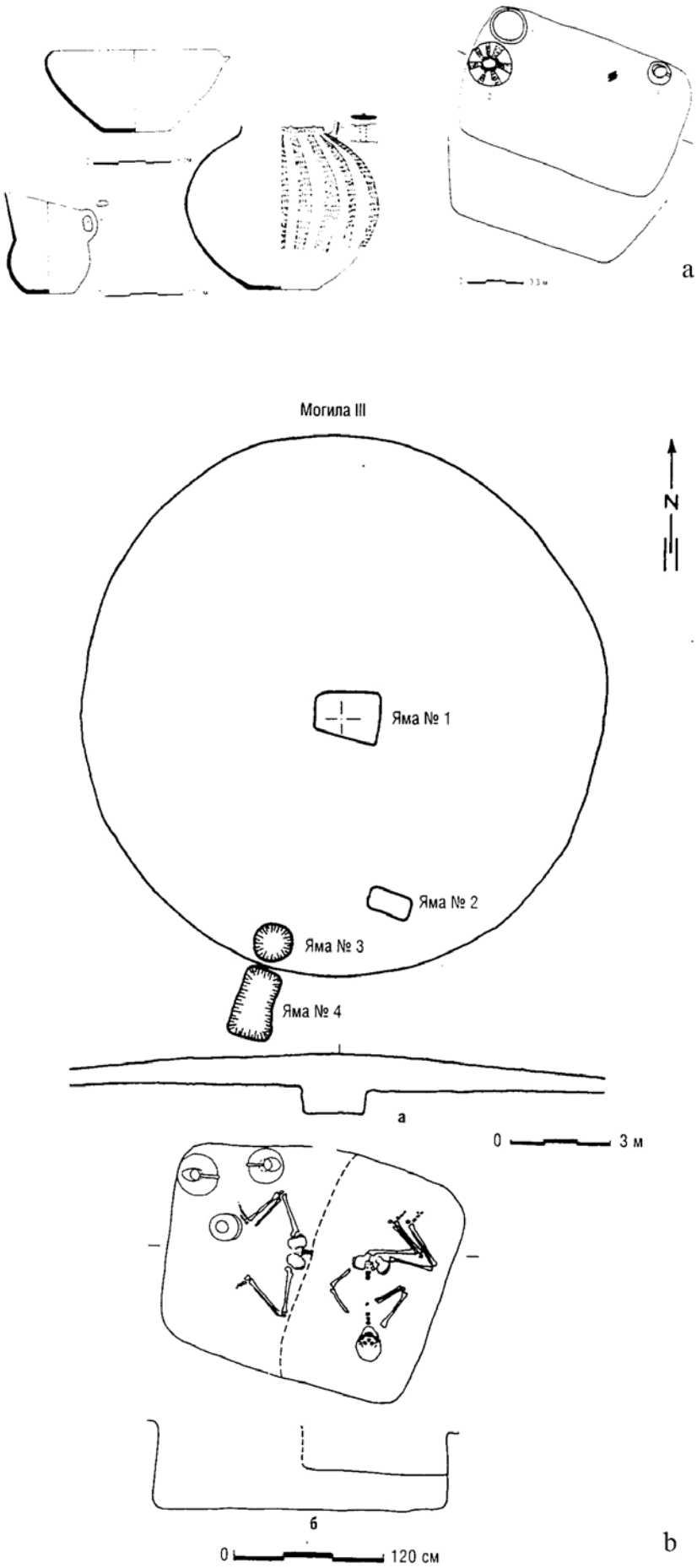


b

AFig. 6.14.4 MIBC2 graves 1-2 (a); MIBC4 graves 1-2 (b)
Source: Panayotov and Alexandrov 1995



AFig. 6.14.5 MIBC3 graves 1-2 (b); content of pit N2 (a)
Source: Panayoutov and Alexandrov 1995

Appendix C - Principal Components Analysis

Appendix C - Principle Components Analysis

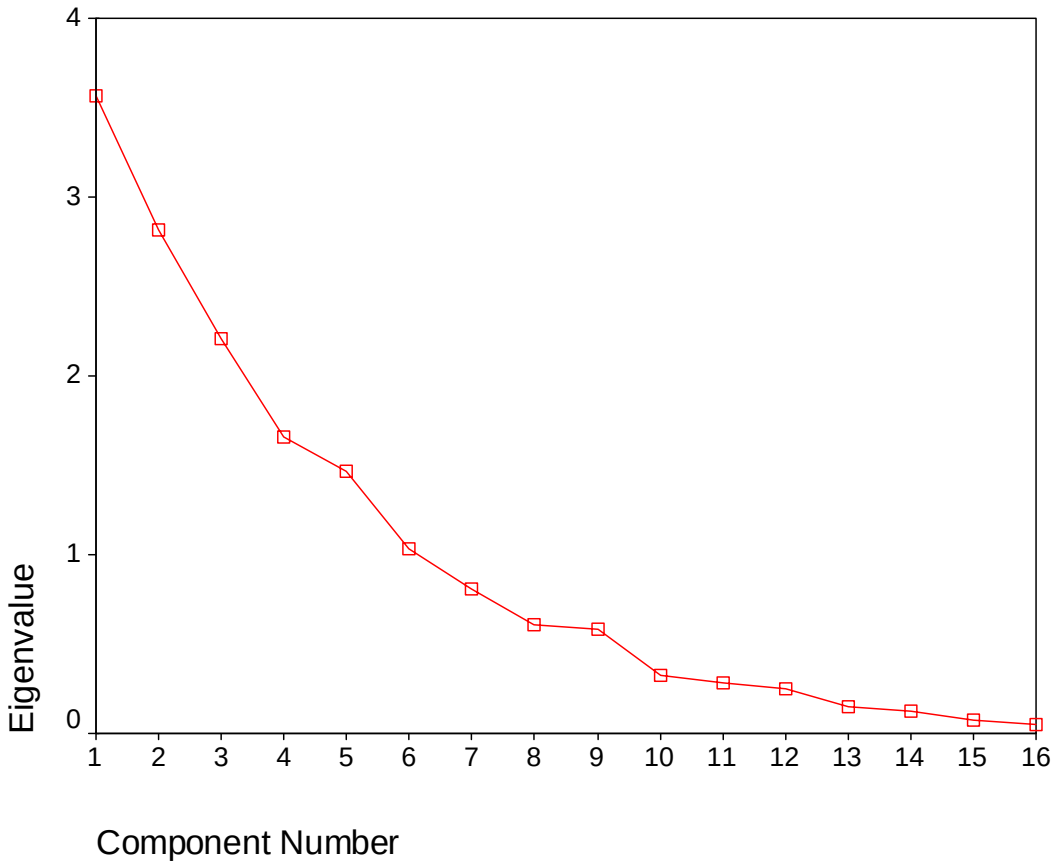
	Sample	C14 BP	CAL BC (1 sigma)	Depth	Mountains		Black Sea coast		Lowlands		Archaeological sites
					low	high	north	south	Danube plain	Upper Thracian plain	
1	S1	4000-interpolated	2590 - 2460	245cm					Sadovo		
2	S2	3170	1515 - 1420	192cm					Sadovo		
3	Sr1	7000-interpolated	-	370cm					Srebarna		
4	Sr2	3830	2460 - 2420	150cm					Srebarna		
5	B1	8220	-	130cm		Pirin					
6	B2	6225	5200	110cm		Pirin					
7	B3	3730	2280 - 2240	85cm		Pirin					
8	Sh1	6800	5550				Shabla				
9	Sh2	5950	4900 - 4790				Shabla				
10	Sh3	5650	4580 - 4450				Shabla				
11	Sh4	3070	1420 - 1300				Shabla				
12	D1	5295	4230 - 4190	250cm							Durankulak
13	D2	4150	2920 - 2870	160cm							Durankulak
14	D3	3070	1420 - 1300	75cm							Durankulak
15	K1	9288	-	90cm	Rhodopes						
16	K2	6167	5060	55cm	Rhodopes						
17	K3	5052	3950 - 3780	35cm	Rhodopes						
18	K4	3521	1940 - 1770	20cm	Rhodopes						
19	V1	eneolith	-								Varna
20	V2	beginning of EBA	-								Varna
21	V3	end of EBA	-								Varna
22	A1	6140	5210 - 5050					Arkutino			
23	A2	5680	4660 - 4640					Arkutino			
24	A3	4500	3340 - 3220					Arkutino			
25	A4	3185	1515 - 1425					Arkutino			

ATable 4.3.1 Calibrated 14-C dates, location and depth for pollen coring sites
(calibration according to OxCal v. 2.18: Stuiver & Reimer 1986)

	SAMPLES	COLOUR	QUERCUS	C.BETULU	C.ORIENT	BETULA	TILIA	PINUS	FAGUS	CORYLUS	ULMUS	HENOPOD	ASTERTYP	RUMEX	CEREALIA	PL.LANCE	POACEAE	ARTEMISI
1	S1	S	6.00	1.00	.00	3.00	1.00	42.00	1.00	.00	3.00	1.50	10.00	.00	.00	1.00	5.00	1.00
2	S2	S	4.00	1.00	1.00	1.50	1.00	15.00	1.00	1.00	1.00	1.00	10.00	.00	.00	1.00	35.00	1.00
3	Sr1	Sr	35.00	10.00	10.00	10.00	2.00	5.00	2.00	5.00	5.00	3.00	3.80	10.00	.00	6.00	.00	2.50
4	Sr2	Sr	40.00	4.00	5.00	5.00	3.00	7.00	8.00	3.00	2.00	5.00	3.00	10.00	18.00	.00	.00	2.50
5	B1	B	2.00	.20	.00	2.90	.30	13.10	.00	.00	.00	8.50	.00	.00	.00	.00	.00	1.20
6	B2	B	6.10	.40	.00	1.40	1.20	23.60	.60	1.20	.00	2.10	.00	1.20	.00	.00	.00	3.70
7	B3	B	1.30	.50	.00	1.00	.50	43.60	.70	.80	.20	.20	.00	2.90	.00	.20	.00	.00
8	Sh1	Sh	13.00	9.00	3.00	1.00	3.00	.00	3.00	.00	7.50	3.50	4.00	.00	9.00	5.00	15.00	7.00
9	Sh2	Sh	12.00	11.00	3.00	3.00	3.00	3.00	.00	.00	7.00	3.50	3.00	.00	10.00	3.00	15.00	10.00
10	Sh3	Sh	13.00	30.00	3.00	3.00	3.00	2.00	3.00	.00	7.50	4.00	3.00	.00	2.00	.00	10.00	8.00
11	Sh4	Sh	15.00	9.00	3.50	3.00	3.00	2.00	3.50	.00	3.00	10.00	4.00	.00	3.00	5.00	15.00	7.00
12	D1	D	22.90	6.20	4.20	1.40	.70	1.40	3.00	1.40	.70	3.50	.00	1.40	2.10	.00	.00	6.90
13	D2	D	19.60	6.70	.90	1.80	.40	4.90	.00	1.80	.40	.90	.00	.00	.40	.00	.00	4.00
14	D3	D	.70	.70	.00	.70	.00	.00	.00	.00	.00	25.50	.00	.00	.00	.00	.00	5.90
15	K1	K	1.90	.20	.20	6.70	.40	1.70	.10	.00	.70	1.10	.00	1.10	.00	.00	.00	.00
16	K2	K	25.00	.70	.40	3.70	3.30	3.20	.10	2.90	7.30	.20	.00	.50	.00	.10	.00	.00
17	K3	K	22.20	2.30	1.20	8.70	4.90	4.00	.00	7.40	7.40	.50	.00	.10	.00	.00	.00	.00
18	K4	K	11.60	1.10	.40	1.30	.50	8.10	1.50	5.40	3.90	.30	.00	.20	.00	.00	.00	.00
19	V1	V	30.00	3.00	.00	.00	.00	18.00	19.00	5.00	.80	2.50	.00	.00	.00	.00	.00	.00
20	V2	V	15.00	4.50	.80	.70	.00	13.00	5.00	5.00	.80	5.50	.00	.00	.00	2.00	.00	.00
21	V3	V	6.00	1.50	.80	.50	.00	9.00	2.50	7.00	.80	4.00	.00	.40	7.00	1.50	.00	8.10
22	A1	A	45.00	10.00	5.00	.50	.50	3.00	7.50	3.70	3.00	.00	.00	.00	.20	.00	8.00	2.00
23	A2	A	25.00	20.00	15.00	.00	.50	.00	3.70	2.00	4.00	.50	.00	.00	.20	.00	8.30	2.00
24	A3	A	40.00	25.00	8.00	.50	.50	2.00	7.50	1.50	3.00	.00	.00	.00	.20	.00	5.00	2.00
25	A4	A	50.00	5.00	12.00	3.00	.00	1.50	3.00	3.70	3.00	2.00	.00	.00	.20	.00	5.50	5.00

ATable 4.3.2 Raw pollen data by (coded) coring site and assemblage

Appendix C - Principal Components Analysis



AFig. 4.3.1 Eigenvalues by component

	Mean	Std. Deviation	Analysis N
QUERCUS	18.4920	14.6545	25
C.BETULU	6.5200	7.9347	25
C.ORIENT	3.0960	4.1087	25
BETULA	2.5720	2.5991	25
TILIA	1.3080	1.3952	25
PINUS	9.0440	11.8579	25
FAGUS	3.0280	4.1362	25
CORYLUS	2.3120	2.3594	25
ULMUS	2.8800	2.6732	25
CHENOPOD	3.5520	5.2468	25
ASTERTYP	1.6320	2.9358	25
RUMEX	1.1120	2.7581	25
CEREALIA	2.0920	4.3890	25
PL.LANCE	.9920	1.8108	25
POACEAE	4.8720	8.2152	25
ARTEMISI	3.1920	3.1487	25

ATable 4.3.3 Mean and standard deviation of principle botanical species

	QUERCUS	C.BETULU	C.ORIENT	BETULA	TILIA	PINUS	FAGUS	CORYLUS	ULMUS	CHENOPOD	ASTERTYP	RUMEX	CEREALIA	PL.LANCE	POACEAE	ARTEMISI
QUERCUS	1.000	.360	.679	.132	.081	-.389	.525	.402	.248	-.311	-.208	.310	.124	-.033	-.107	-.067
C.BETULU	.360	1.000	.573	-.103	.178	-.407	.209	-.192	.452	-.138	-.002	-.055	.056	.101	.242	.359
C.ORIENT	.679	.573	1.000	.092	-.022	-.420	.160	.091	.257	-.184	-.067	.260	.056	.160	.125	.148
BETULA	.132	-.103	.092	1.000	.561	-.152	-.301	.193	.368	-.106	.148	.556	.064	.287	-.171	-.156
TILIA	.081	.178	-.022	.561	1.000	-.233	-.194	.001	.773	-.101	.257	.219	.405	.346	.205	.193
PINUS	-.389	-.407	-.420	-.152	-.233	1.000	-.013	-.101	-.368	-.198	.316	.044	-.190	-.135	-.098	-.393
FAGUS	.525	.209	.160	-.301	-.194	-.013	1.000	.294	-.127	-.111	-.127	.089	.131	-.082	-.069	-.159
CORYLUS	.402	-.192	.091	.193	.001	-.101	.294	1.000	.084	-.279	-.339	.176	-.049	-.053	-.371	-.295
ULMUS	.248	.452	.257	.368	.773	-.368	-.127	.084	1.000	-.258	.175	-.013	.201	.341	.238	.213
CHENOPOD	-.311	-.138	-.184	-.106	-.101	-.198	-.111	-.279	-.258	1.000	-.046	-.022	.081	.120	-.077	.353
ASTERTYP	-.208	-.002	-.067	.148	.257	.316	-.127	-.339	.175	-.046	1.000	.116	.170	.402	.685	.076
RUMEX	.310	-.055	.260	.556	.219	.044	.089	.176	-.013	-.022	.116	1.000	.439	.281	-.249	-.103
CEREALIA	.124	.056	.056	.064	.405	-.190	.131	-.049	.201	.081	.170	.439	1.000	.255	.116	.461
PL.LANCE	-.033	.101	.160	.287	.346	-.135	-.082	-.053	.341	.120	.402	.281	.255	1.000	.320	.365
POACEAE	-.107	.242	.125	-.171	.205	-.098	-.069	-.371	.238	-.077	.685	-.249	.116	.320	1.000	.260
ARTEMISI	-.067	.359	.148	-.156	.193	-.393	-.159	-.295	.213	.353	.076	-.103	.461	.365	.260	1.000

ATable 4.3.4 Correlation Matrix

	Initial	Extraction
QUERCUS	1.000	.852
C.BETULU	1.000	.730
C.ORIENT	1.000	.885
BETULA	1.000	.886
TILIA	1.000	.884
PINUS	1.000	.756
FAGUS	1.000	.789
CORYLUS	1.000	.633
ULMUS	1.000	.891
CHENOPOD	1.000	.713
ASTERTYP	1.000	.879
RUMEX	1.000	.898
CEREALIA	1.000	.822
PL.LANCE	1.000	.546
POACEAE	1.000	.799
ARTEMISI	1.000	.791

Extraction Method: Principal Component Analysis.

ATable 4.3.5 PCA extraction by main botanical species

	Initial Eigenvalues			Extraction Sums of Squared Loadings			Rotation Sums of Squared Loadings		
Component	**Total**	**% of Variance**	**Cumulative %**	**Total**	**% of Variance**	**Cumulative %**	**Total**	**% of Variance**	**Cumulative %**
1	3.566	22.290	22.290	3.566	22.290	22.290	2.531	15.818	15.818
2	2.816	17.599	39.889	2.816	17.599	39.889	2.391	14.943	30.762
3	2.211	13.816	53.705	2.211	13.816	53.705	2.294	14.337	45.099
4	1.662	10.389	64.094	1.662	10.389	64.094	2.016	12.602	57.701
5	1.463	9.145	73.240	1.463	9.145	73.240	2.011	12.566	70.266
6	1.034	6.463	79.703	1.034	6.463	79.703	1.510	9.437	79.703
7	.806	5.036	84.738						
8	.611	3.822	88.560						
9	.580	3.622	92.182						
10	.324	2.028	94.210						
11	.282	1.759	95.970						
12	.251	1.566	97.536						
13	.149	.934	98.470						
14	.121	.757	99.227						
15	.075	.470	99.697						
16	.048	.303	100.000						

Extraction Method: Principal Component Analysis.

ATable 4.3.6 Cumulative and total variance by components

	Component					
	1	2	3	4	5	6
ULMUS	.771			.195	-.439	.234
TILIA	.708	-.212	.400		-.274	.319
C.BETULU	.574	.153	-.566	.174	-.106	-.122
PL.LANCE	.564	-.342	.166		.238	-.148
C.ORIENT	.554	.461	-.327	.113	.108	-.484
PINUS	-.554	-.228	.362	.406	.317	
CEREALIA	.501	-.127		-.354	.478	.440
ARTEMISI	.460	-.388	-.455	-.454		.109
QUERCUS	.456	.765	-.128	.117	.168	
CORYLUS		.665	.325			.283
ASTERTYP	.279	-.619	.184	.488	.370	
POACEAE	.365	-.549	-.316	.493	.144	
FAGUS		.540	-.265	.156	.520	.363
BETULA	.437		.744		-.210	-.288
RUMEX	.348	.252	.571	-.226	.514	-.266
CHENOPOD	-.121	-.354	-.189	-.707	.115	-.158

Extraction Method: Principal Component Analysis.

ATable 4.3.7 Matrix of component scores

	Component					
	1	2	3	4	5	6
C.ORIENT	.908				.228	
C.BETULU	.765	.200	.191	.115	-.222	
QUERCUS	.694		-.247	-.234	.226	.442
PINUS	-.590	-.347	.295	-.440		
TILIA		.898	.136		.230	
ULMUS	.315	.878	.124			
ASTERTYP	-.154	.119	.888		.210	
POACEAE	.159	.175	.828		-.234	
CORYLUS		.190	-.563	-.373	.179	.329
PL.LANCE	.110	.278	.436	.283	.430	
ARTEMISI	.207	.215	.205	.801	-.120	
CHENOPOD	-.158	-.265		.755		-.192
RUMEX					.925	.188
BETULA		.463	-.117	-.172	.705	-.362
FAGUS	.220	-.199		-.153		.815
CEREALIA		.338	.141	.500	.333	.565

Extraction Method: Principal Component Analysis.
Rotation Method: Varimax with Kaiser Normalization.

ATable 4.3.8 Rotated (Varimax) component matrix

Component	1	2	3	4	5	6
1	.558	.669	.268	.222	.326	.118
2	.463	-.111	-.676	-.407	.137	.362
3	-.519	.297	-.124	-.368	.685	-.151
4	.120	.055	.538	-.792	-.245	.071
5	-.065	-.473	.383	.138	.441	.641
6	-.432	.474	-.138	.052	-.388	.645

Extraction Method: Principal Component Analysis.
Rotation Method: Varimax with Kaiser Normalization.

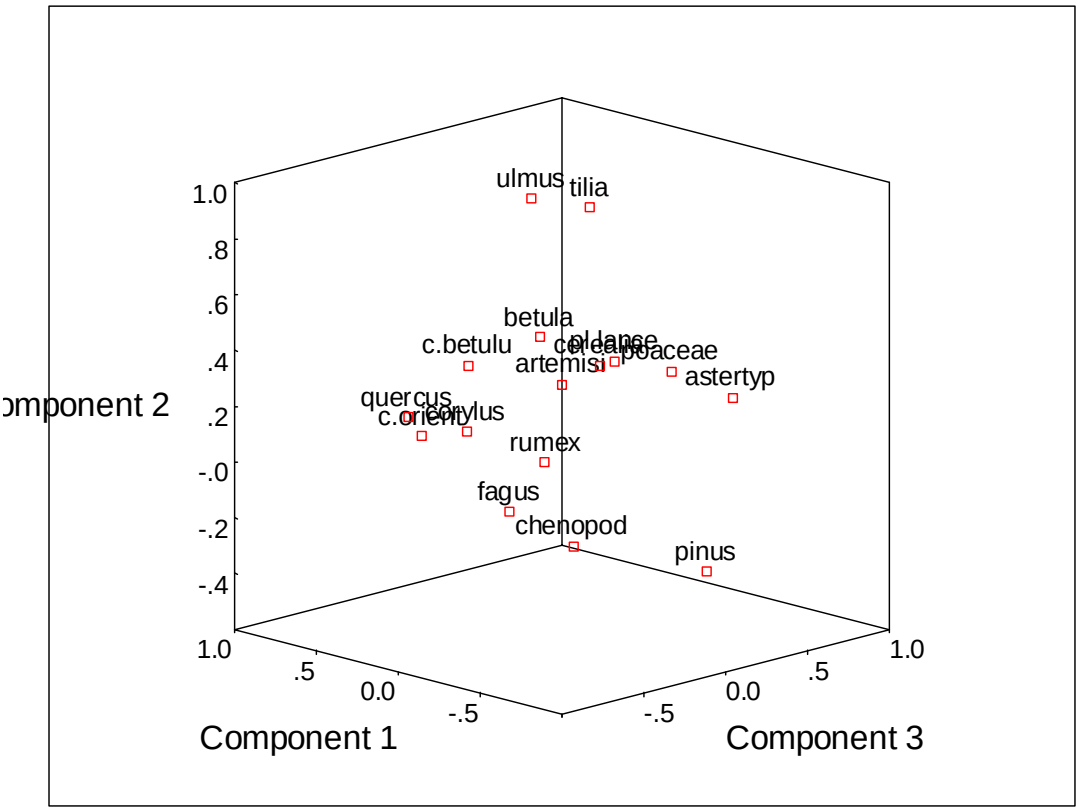
ATable 4.3.9 Component transformation matrix

K.Willis's claims	*Evidence from Bulgaria*
1. Expansion of *Pistacia* 9000-8000 BP	
• There was an expansion of *Pistacia* in Bulgaria	• There is a little*Pistacia* in Bulgaria now and no polen evidence for *Pistacia* in the past
2. Change in forest dominants between 8000 – 7000 BP	
• Suho ezero – reduction in woodlands of Betula and increase in dominance of *Quercus, Corylus, Ulmus* and *Fraximus exelsior* – 8000 BP	• The C14 dates for Suho ezero are 10 060 and 2880 so 8000 as given in K. Willis is interpolated. What the data really shows is fluctuation of *Betula* during the Early Atlantic together with fluctuation of *Quercus*, which quantitiy in most cases is more or equal with *Betula*. *Corylus*, *Ulmus* and *Fraximus exelsior* do present in the Early Atlantic but they are far from dominance. Impressive in fact is the percentage of *Tilia*. More or less the situation described by K. Willis for 8000 is in fact in the Late Atlantic
3. The increase of *C. orientalis/Ostrya, Abies, C. betulus* and *Fagus* in woodlands between 7500 – 5000 BP	
• Durankulak – 6170 BP - increased abundance of C. betulus in woodlands	• According to the new chronology of Durankulak, the date 6170 BP is rejected by the investigators themselves. Between 420 – 400 cm from which level this date came the percentage of *C. betulus* in not that high. It has its peaks before and after 420-400cm
• Suho ezero - 7000 BP – appearance and increase of *Abies,Pinus, C. betulus* and *Quercus* in the woodlands	• Pinus present in Rila sequence even in Preboreal and gradually increases during the Holocene. In Late Atlantic, however, *Pinus pence* has appeared and maybe that is the species K.Willis means. A little later than Pinus pence, Abies appeared in the pollen diagram – again in the Late Atlantic. If we have to interpolate dates for this appearance it will be after 6500 BP according to investigators' chronology. Late Atlantic is the time of appearance of the both *Carpinus*, as well. Their increase, however, is visible in the diagram during the Subboreal – e.g. after 5000 BP.

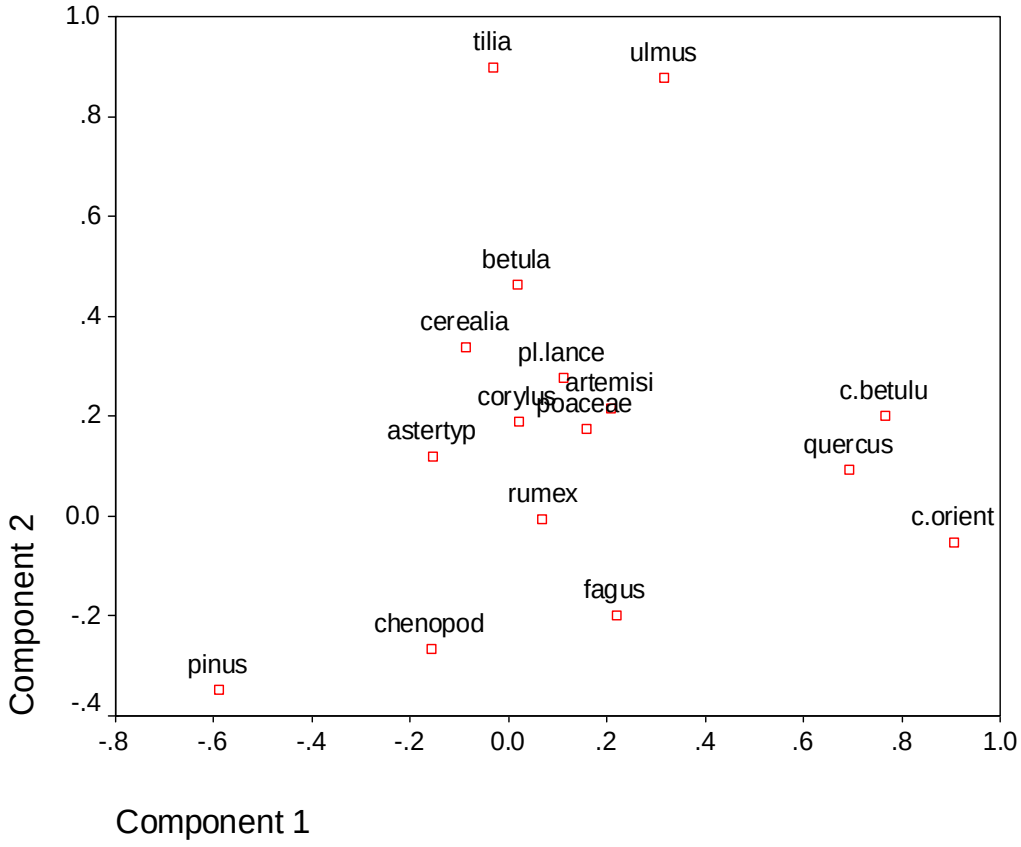
ATable 4.3.10 Evaluation of Willis' (1994) main claims for Bulgarian vegetational history

4. Development of present day landscape 4500 – 2000 BP (human impact)	
• Durankulak – 6200 BP – reduction in *Quercus* in woodlands and rise of *Cerealia*-type, *Plantago lancealota and Polugonum aviculare*	• Durankulak is the only coring site with archaeological site around. Nevertheless K.Willis speaks about change that has happened arround 4500 she uses quite earlier examples. However, such date 6200 BP does not exist according to the updated Durankulak chronology. The herbaceous mentioned by Willis do not develop on credit of *Quercus*. Once established *Quercus* has relativelly stable development. *Cerealia*-type, *Plantago lancealota* and *Polugonum aviculare* do not have imediate affect on *Quercus* distribution, which remains stable untill the end of the sequence.
• Shabla-Ezerets – 6000 BP - reduction in *Quercus* in woodlands and increase of *Cerealia*-type, *Plantago lancealota* and *Polugonum aviculare*	• The presumed *Quercus*/herbaceous (*Cerealia*-type, *Plantago lancealota* and *Polugonum aviculare*) inter-relation in fact appears arround 5000 BP, not in 6000 as claimed. Throughout the rest of the sequence *Quercus* remains with constant average values of 14%, while the herbaceous vary and never exceeded these 14%
• Suho ezero – 2880 – reduction in mixed woodlands with increase of *Fagus, Picea, Cerealia*-type *Plantago lancealota* and *Polugonum aviculare*	• After 2880 BP reduction of *Quercus* woodlands that has started in the previous period continued to go. While *Fagus* and *Picea* really appeared and spread after 2880 BP, *Cerealia*-type is not present in the diagram at all. Instead, tiny percentage of *Triticum* is visible in the Late Subatlantic period. Then is the more substantial spread of *Plantago lancealota*, as well.

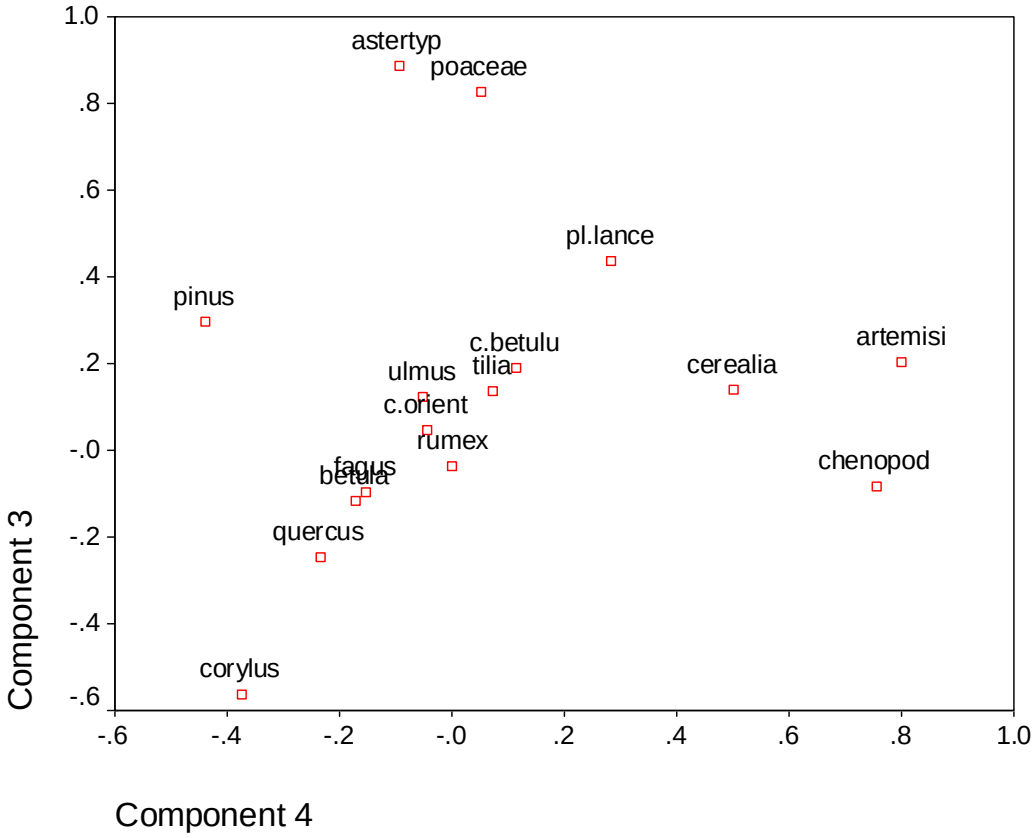
ATable 4.3.10 (cont.)



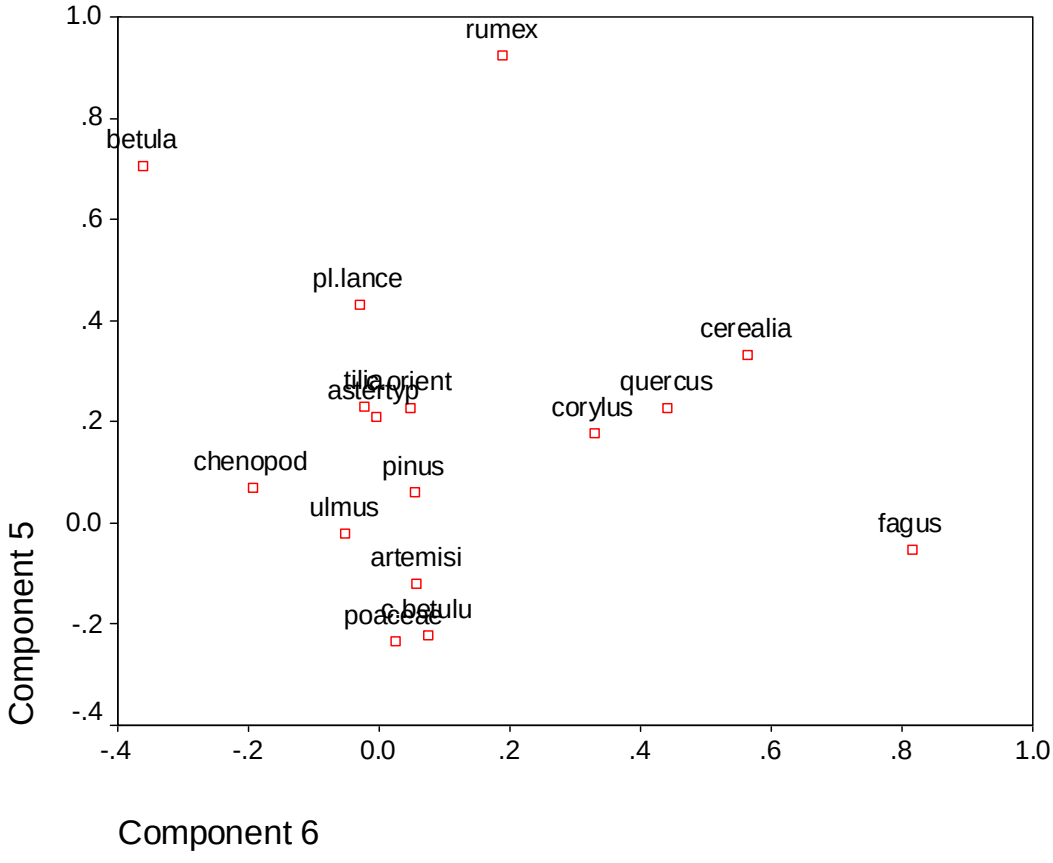
AFig. 4.3.2 Component Plot in Rotated 3-dimensional Space



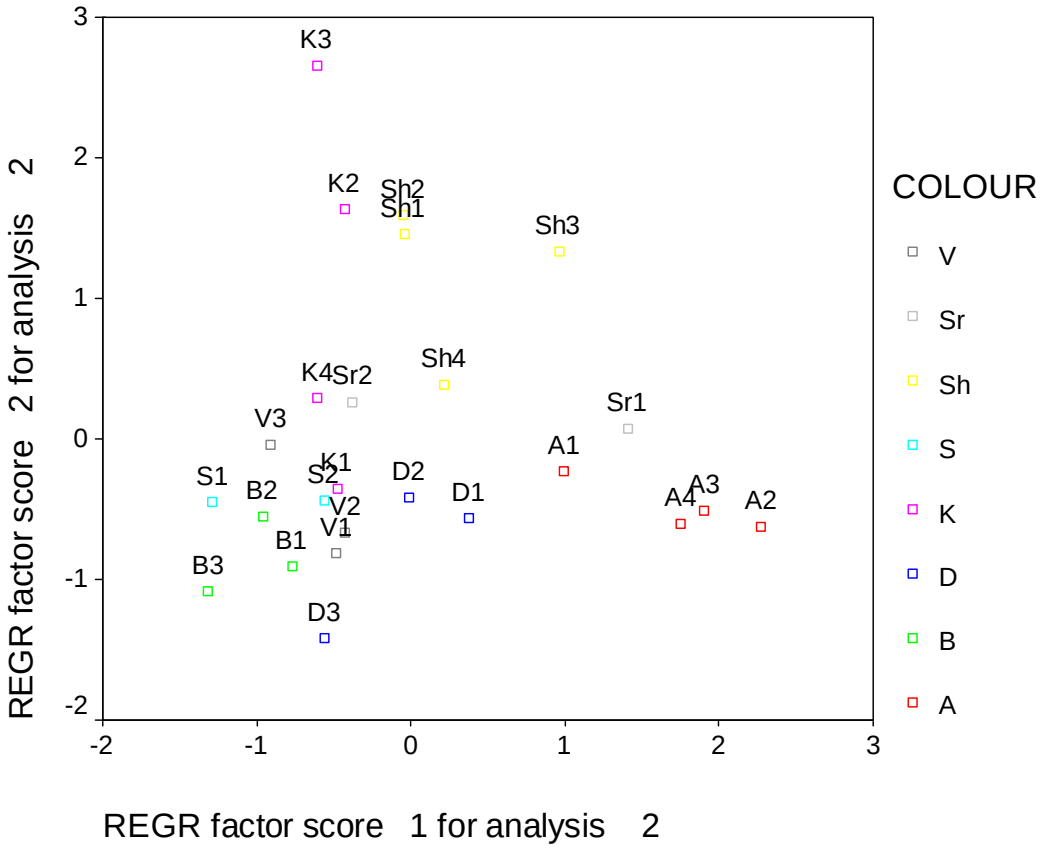
AFig. 4.3.3 Component Plot in Rotated Space – Components 1 and 2



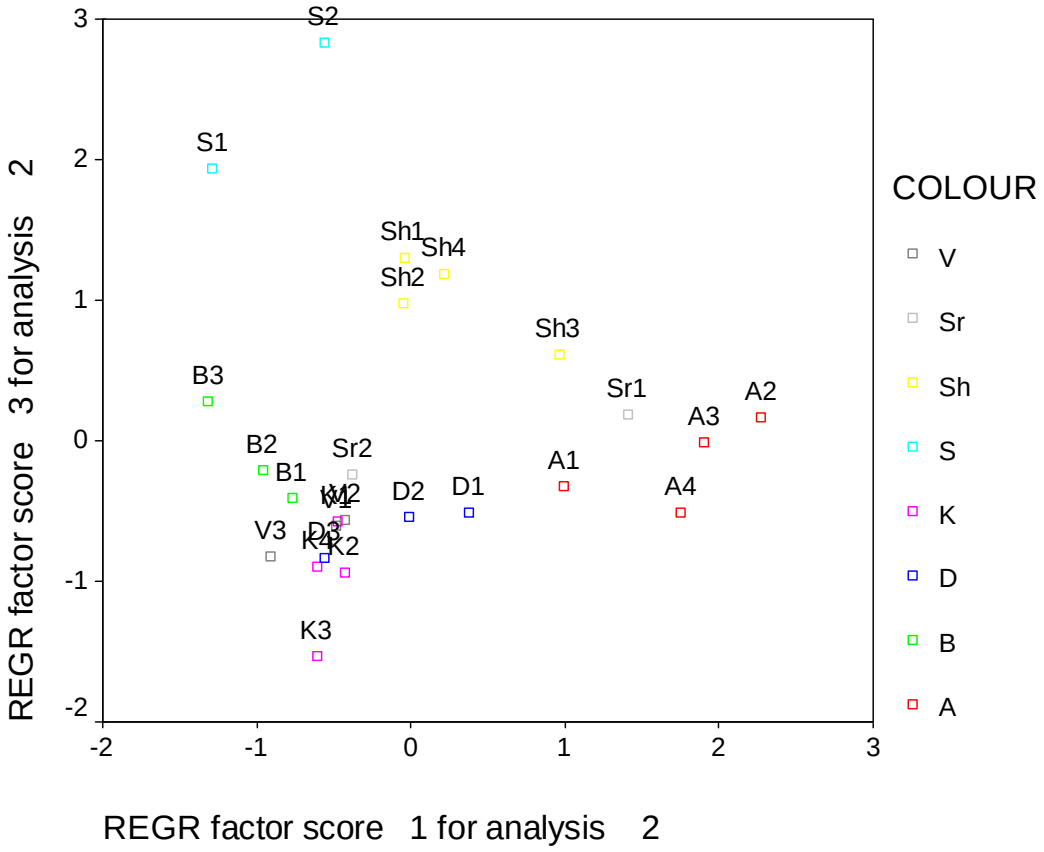
AFig. 4.3.4 Component Plot in Rotated Space – Components 3 and 4



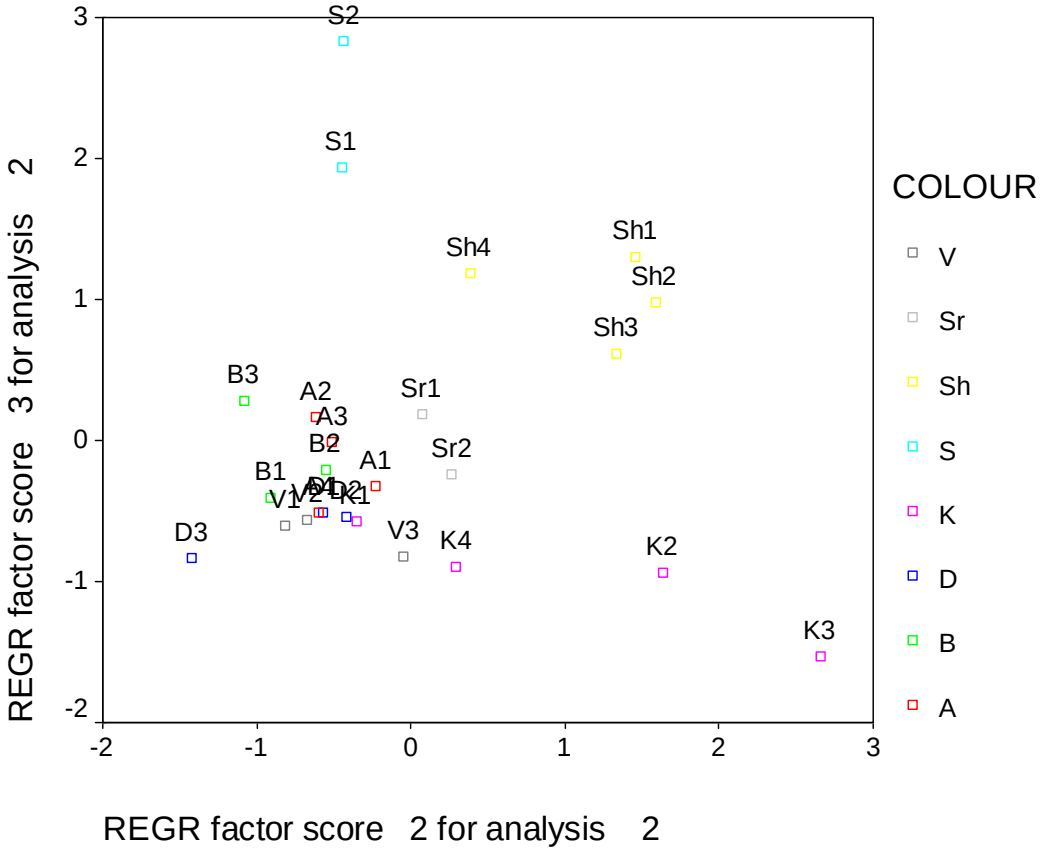
AFig. 4.3.5 Component Plot in Rotated Space – Components 5 and 6



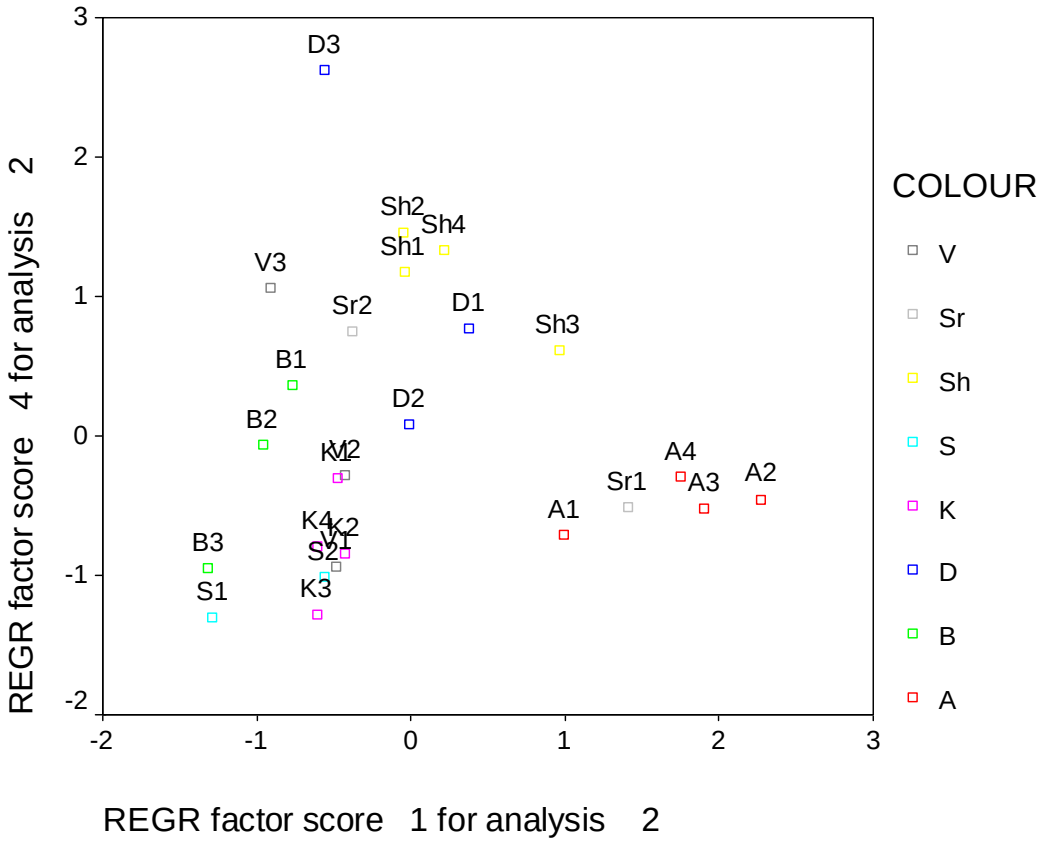
AFig. 4.3.6 Pollen assemblages by principal components 1 and 2



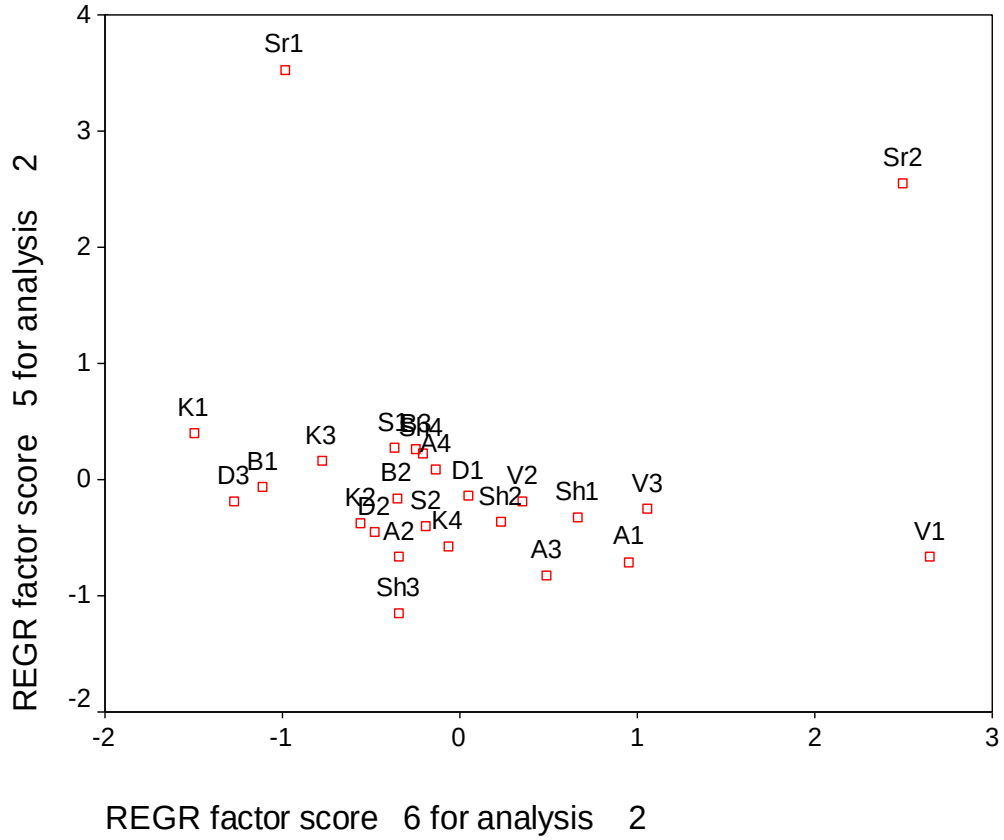
AFig. 4.3.7 Pollen assemblages by principal components 1 and 3



AFig. 4.3.8 Pollen assemblages by principal components 2 and 3



AFig. 4.3.9 Pollen assemblages by principal components 1 and 4



AFig. 4.3.10 Pollen assemblages by principal components 5 and 6

Appendix D : Content and instruction for the use of the CD-ROM

GIS Data Analysis and Colour Figures

- The original GIS application has been made in ArcView 3.2a. It contained more than 1,200 individual sample screens displaying the results of the different analyses discussed in detail in the main text. The original GIS model was interactive, allowing some choice to view different sample screens. However, it requires the expensive and relatively complicated ArcView 3.2a software.

- For the purposes of wider access to the data, 506 screens were chosen here to illustrate the results of the GIS analyses and exported into JPEG files. The images were inserted as hyperlinks in the text, which was also converted into hypertext. Microsoft FrontPage was used to change the doc. and jpg. files into html. format.

Any web browser is sufficient to access the data on the CD-ROM and a working Internet connection is not necessary. The CD contains nine html files (the text of the thesis) with embedded jpg. files, which appear in the text as "CDFigs". Depending on your computer's type of web browser, different steps have to be followed in order to open the embedded files (the highlighted "CDFig."). These steps are usually specified by targeted messages (e.g. CTRL + click to follow link) or are readily opened by clicking on the highlighted link of the desired image. In some cases, it might be necessary to have image software (e.g. Photoimpact) already opened, in order to open the image hyperlink. To enable access to the images, it is essential that the 506 images as jpg. files are also stored on the same digital carrier. There are also other jpg. files, which appear under the name *chapter* and which are created automatically by the software for the image files inserted in the paperback copy of the thesis.

Finally, the CD-ROM contains 14 colour images (Figs. 3.4.1 – 10; Figs. 4.3.2 -4 and Fig. 4.1.7) that were originally part of the bound copy of the thesis. They can be opened with any software that supports the jpg. format. For each of the Figs. 4.3.2 -4 and Fig. 4.1.7, a key is provided in four separate Word files.